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CONTENTS AND DIGEST

The Supplementary Dietary Relationships Among Our Natural Foodstuffs. E. V. McCollum, Ph.D., Madison, Wis. 1379

Review of the work on the subject during the past decade. Working hypothesis as to an adequate diet, including the admission of two as yet unidentified dietary factors. Studies of some of the more important foodstuffs as to their dietary deficiencies with the aid of this working hypothesis. Reports of the author's experiments. The causes of scurvy and beriberi. Application to human diet of the findings of the author's investigations.

Application of the Complement-Fixation Test to Tuberculosis. Newell Bly Burns, M.D., North Wilmington, Mass., Francis H. Slack, M.D., Philip Castleman, M.D., and Karl Bailey, M.D., Boston.....1386

Variations and results of different studies on the value of complement-fixation test in the diagnosis of tuberculosis. Miller and Zinsser's work. The authors' experiments and methods. Grouping of cases: 1. Known tuberculous patients. 2. Tuberculous patients unknown to the laboratory. Character of sputum. Value of the complement-fixation test as an aid to diagnosis.

Conjugal Tabes Dorsalis. Tom Bentley Throckmorton, M.D., Des Moines, Iowa.....1389

Importance of syphilitic infection as a cause of tabes and paresis. The neuropathic theory. Possibility of variability of spirochetal strains. Apparent rarity of the conjugal type of tabes. Report of cases.

The Prophylaxis of Anesthesia Acidosis. William H. Morriss, M.D., New Haven, Conn.....1391

Regulation of equilibrium of acids and bases in the body; its mechanism; the part taken by the lungs. Acetonuria. The author's methods of experimentation as regards acidosis and anesthesia.

Gastric and Duodenal Infusion by Means of the Duodenal Tube: A New Procedure in Postoperative Treatment. Golder L. McWhorter, M.D., Minneapolis.....1395

Advantages of the use of the duodenal tube over the biliary fistula method. Description of the author's method. Case reports.

Reconstruction of the Pylorus and Pyloric Antrum by Two Superimposed Fascial Transplants After Excision of Pyloric Ulcer. Alfred A. Strauss, M.D., Chicago.....1397

Slight changes in the treatment of gastric and duodenal ulcer during the last thirty years. Pyloric closure. The author's operation described; first and second methods.

Usefulness of Serums and Vaccines Under War Conditions. G. W. McCoy, M.D., Washington, D. C.....1401

Agents of proved worth: smallpox vaccine; antidiphtheric serum; antitetanic serum; antimeningococcus serum; antityphoid vaccine. Agents not well established but worthy of trial: antidysentery serum; antipneumococcus serum; bacterial vaccines. Anaphylaxis.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

A Ligature Knot Tier. Henry R. Boettcher, M.D., Chicago.....1403

(Continued on next page)

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See Page 3

CONTENTS AND DIGEST—Concluded

Pellagra with Erythema of Scrotum as Initial Skin Manifestation. C. E. Crosby, M.D., Great Falls, S. C...1403

Treatment of Skin Erosions with Paraffin. Elwood B. Haworth, M.D., Pittsburgh.....1404

THERAPEUTICS

Disturbances of the Kidneys (Continued) 1404

NEW AND NONOFFICIAL REMEDIES

Description of Articles Accepted by the Council on Pharmacy and Chemistry 1406

Parresine — Siomine — Mercuric Salicylate—Arsenphenol-Amine Hydrochloride.

SPECIAL ARTICLE

The Medical Officer of the Army: IV. Recruiting; Examination of Recruits; Status of Medical Officer.....1407

EDITORIALS

Prophylactic Inoculation Against Pneumococcal Infection.....1410

Results in the immunization of man.

The Routine Examination of the Placenta.....1411

Information to which this may lead.

Acids and Alkalies in Relation to Diabetes.....1411

View that hydrochloric acid from the stomach, when unneutralized, poisons the liver and causes diabetes.

CURRENT COMMENT

Biologic Therapy in the War.....1413

Opportunity for testing efficacy of many biologic products.

The Status of Enrolment of Medical Officers.....1413

Steps necessary to obtain a commission.

The Need of Medical Officers.....1413

The great number yet to be commissioned.

What Is Adipocere?.....1413

The residue of the preexisting fats of animals.

Medical Leaven in the Advertising Lump 1414

Influences which keep advertising in New Orleans on a decent basis.

MEDICAL MOBILIZATION AND THE WAR 1414

Application Blanks Must Be Sworn To.
Military Measures Against Venereal Diseases and Alcohol.
Medical Students and Conscription.
The Medical Services in the Somme Advance.
The Shortage of Physicians in England.
Young Men Needed for Hospital Corps.
The Duty of Members of the Old Reserve Corps.
War Budget for the Medical Department.
Young Physicians Pass Tests for Navy.
Forward Blanks to Examining Boards.
Universities and Colleges Supply Ambulance Companies.
Bureau of Standards to Examine Blood Counting Apparatus.
New Military Hospital.
The English Red Cross in Italy.
Physicians Favor Prohibition During War.
War Fund of Rockefeller Institute.
Bill to Abrogate the Patent on Salvarsan.
Orthopedic Surgeons Sail for England.
Ambulance Notes.
Federal Aid for Rural Sanitation Recommended.
Standardization of Biological Products.
Base Hospital Units Sail.
Special Regulations on Designation of Medical Section, Officers Reserve Corps.
Instructions to Medical Officers of the Officers Reserve Corps.

MEDICAL NEWS

California 1417
Connecticut 1417
Florida 1417
Georgia 1417
Indiana 1417
Kansas 1417
Louisiana 1418
Maryland 1418
Massachusetts 1418
Nebraska 1418
New York 1419
Oklahoma 1419
Pennsylvania 1419
South Carolina 1419
Texas 1419
Wisconsin 1419
Canada 1419
General 1420
Foreign 1420
London Letter 1421
Paris Letter 1422

ASSOCIATION NEWS 1423

The New York Session.
New York Clinical Sessions.
General Clinical Sessions Committee.

MARRIAGES 1426

DEATHS 1426

PROPAGANDA FOR REFORM 1427

More Misbranded Nostrums.

CORRESPONDENCE 1428

Typhoid in American Cities.
Shortage of Salvarsan an Intolerable Burden.
The Dating of Biologic Products.
Compulsory Health Insurance.

QUERIES AND MINOR NOTES 1430

Detection of Tubercle Bacilli in the Feces.
Literature on Whole Time Health Service.
The Two Mascagnis: Musician and Anatomist.
Lubricating Jelly.
Use of Salvarsan in Tabes with Optic Atrophy.
The Old Automobile Supply Scheme.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — District of Columbia January Report — Indiana January Report —South Dakota January Report — Vermont February Report 1431

BOOK NOTICES 1431

MEDICOLEGAL

Validity of Laws Fixing Minimum Percentage of Butter Fat for Ice Cream — Speculation as to Cause of Condition Not Tolerated — Roentgenographic Plates Alone Not Evidence 1432

SOCIETY PROCEEDINGS 1433

Coming Meetings.

CURRENT MEDICAL LITERATURE

American Medical Journals

Treatment of Wound Infection.....1433

New Operation for Procidentia Uteri—Hemangioma Cavernosum of Bone — Duodenal Ulcers in Infancy.....1434

Bence-Jones Proteinuria—Chemical Nature of Vitamins—Neutralizing Substances in Poliomyelitis—Neutralization of Virus of Poliomyelitis — Mechanism of Defense in Poliomyelitis 1435

Survival of Poliomyelitic Virus — Globoid Bodies in Poliomyelitis—Streptococci from Poliomyelitis—Serum Treatment of Epidemic Poliomyelitis—Action of Strychnin in Cardiac Irregularities—Pharmacology of Vagina.1436

Fascia Transplantation into Visceral Defects—Effect of Cholecystectomy — Simulation of Ovarian Cysts and Ectopic Pregnancy—Surgical Research of Great Omentum.....1437

Studies of Pancreas — Transplantation of Ureters into Intestines—Colonic Dilatation.. 1438

Foreign Medical Journals

Hemothorax Infected by Gas Producing Bacilli—Treatment of Infected Gunshot Injuries of Shoulder and Elbow Joints...1438

Cultivation of Malarial Parasite — Operative Treatment of Abdominal Aneurysm—Pneumococcus Diphtheria—Colored Sweat...1439

Shell Shock of Internal Ear—Insufficiency of the Kidneys and Gastro-Intestinal Derangement—Pericarditis with Effusion — Trench Frostbite—Transfusion of Blood After Hemorrhage 1440

Gastric Ulcer—Repair with Bone Grafts—Sensory and Motor Disturbances of Reflex Origin—Tendon Graft for Radial Paralysis—Quantitative Test for Uric Acid in the Urine —Mixed Tumor of the Tonsil—Suture of the Liver 1441

Suppuration in a Goiter—Paralysis After Pasteur Treatment for Rabies—Leprosy in Argentine Province—Lymphocytosis in Syphilitics—Hernia of the Diaphragm—Progressive Paralysis—Warmth Hemolysis — Paroxysmal Hemoglobinuria — Micromethod for Sugar Determination 1442

Proteus Infection of the Middle Ear—Experimental Labyrinthitis—Drugs in Wartime—Optochin—Five Years Radiotherapy of Cancer — Primary Syphilid with Inherited Syphilis? 1443

Fatal Tetany in Adult — Tardy Congenital Syphilis — Complications of Gastro-Enterostomy—Operations for Pulmonary Tuberculosis—Fatal Results from Too Exclusive Carbohydrate Feeding of Infants.....1444

TONICS AND SEDATIVES—BOOKS RECEIVED..Adv. Page 20

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THE SUPPLEMENTARY DIETARY RELATIONSHIPS AMONG OUR NATURAL FOODSTUFFS *

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MADISON, WIS.

In order that I may illustrate the supplementary dietary relationship among certain of our naturally occurring foodstuffs, it is essential first that I offer convincing evidence that we are now in a position to devise experimental procedure which is adequate to reveal such relationships. Secondly, it must be shown that we possess sufficiently complete knowledge of the essential factors which operate in making a diet for a growing animal to enable us to interpret correctly the results of feeding experiments. This can be done perhaps best by briefly reviewing the work of the past decade which has been most significant in advancing our knowledge of the chemical complexes which are indispensable to the growing mammal.

Previous to 1909 a number of attempts had been made to nourish animals on diets composed of purified protein, carbohydrates, fats and inorganic salts, usually with a small admixture of cellulose. Such attempts were attended with failure. In every instance the cause of the failure was entirely unknown. The speculations regarding the cause dwelt principally on the dependence of the mammal on a supply of some organically combined forms of phosphorus, as phosphoprotein, lecithin and nucleic acid; its requirement of iron in some special organic form, and with the need of purin bases performed in the diet.[1] The first experimental work which proved fertile in advancing our knowledge regarding the factors which are essential in an adequate diet was that of Stepp.[2] He attempted to estimate the importance of lipoids in nutrition, and found that bread prepared with milk was after extraction with ether and alcohol no longer capable of maintaining life in mice. The total material extracted by the solvents, when put back into the diet, made the food efficient once more. Stepp was unable to obtain this result by the addition of any known lipoid. The latter result is significant in the light of later developments.

In 1911 Osborne and Mendel[3] reported remarkable results in experiments involving growth in young rats which were fed a mixture of purified protein, carbohydrate, fat, and 28 per cent. of what they termed "protein free milk," a preparation made by removing the casein of skim milk with acid and the albumin so far as possible by coagulation with heat. The "protein free" whey was evaporated to dryness. "Protein free milk" was found to induce normal growth when supplemented with purified food ingredients, and its discoverers were inclined to attribute its virtues to a nice adjustment of the inorganic constituents of the diet, although they appreciated the possible importance of unknown constituents. Two years previously Hart, Steenbock, Humphrey and I[4] had reported most marked improvement in the capacity of cows fed on a ration restricted to the products of the wheat plant, to produce viable young, by suitable supplementing of the food mixture with certain inorganic salts, and this seemed at the time to be an adequate explanation of the good effects of feeding "protein free milk."

There were observations at this time available in the literature of pathology which were of great value in suggesting profitable lines of procedure to those who were engaged in studying the problems of normal nutrition during growth. In 1897 Eykmann[5] had reported his observations on the production of experimental polyneuritis in fowls, analogous to human beriberi, restricting them to a diet of polished rice. He further showed that undecorticated rice could induce a cure of fowls in this condition.

Fraser and Stanton[6] in 1907 had employed alcoholic extracts of rice polishings for the relief of experimental polyneuritis. In 1911 Funk[7] took up the study of the problem and showed that pressed yeast, hydrolyzed with 20 per cent. sulphuric acid for twenty-four hours, still retained its property of curing polyneuritis when administered to birds. This observation disposed of the view, which had been much discussed, that some organic phosphorus compound was the curative agent. All such compounds are reduced to their simplest cleavage products by such vigorous treatment. Funk and simultaneously Suzuki[8] and his co-workers in Japan showed that the substance which relieves polyneuritis is precipitated by phosphotungstic acid and is therefore an organic base.

It would be obvious to any one who made careful inspection of the literature up to the end of 1911 that further efforts directed toward the nutrition of animals with purified food substances must be attended with failure. As early as 1906, Hopkins[9] had reported

* Read before the Harvey Society of New York, Jan. 13, 1917.

1. The earlier experiments in this field are summarized by the author in the American Journal of Physiology, 1909, **25**, 120.
2. Stepp, W.: Biochem. Ztschr., 1909, **22**, 452; Ztschr. f. Biol., 1912, **57**, 135; ibid., 1912-1913, **59**, 366.
3. Osborne, T. B., and Mendel, L. B.: Publications of the Carnegie Institution of Washington, Bull. 156, Pt. 2, 1911.
4. Hart, E. B.; McCollum, E. V.; Steenbock, H., and Humphrey, G. C.: Research Bull. 17, Wisconsin Expt. Sta., 1911.
5. Eykmann, C.: Arch. f. Hyg., 1906, **58**, 150; Arch. path. Anat., 1897, **148**, 523.
6. Fraser, H., and Stanton, A. T.: Lancet, London, March 12, 1910, p. 733; The Etiology of Beri Beri, Study 12 from the Institute for Medical Research, Federated Malay States, 1911.
7. Funk, C.: Lancet, London, 1911, **2**, 1266.
8. Suzuki, S.; Shimamura, T., and Odake, S.: Biochem. Ztschr., 1912, **43**, 89.
9. Hopkins, F. G.: Jour. Physiol., 1912, **44**, 425.

his observation that the addition of small amounts of milk to food mixtures consisting otherwise of purified protein, fats, carbohydrate and salt exerted a favorable influence on nutrition which was out of all proportion to the calorific value of the added milk, and he expressed the belief that there existed certain "accessory food substances" indispensable from the diet. These observations convinced me of the importance of further examination of the lipoid moiety of the diet. In 1912 Miss Davis and I observed the remarkable stimulating action on growth of purified butter fat and of the ether extract of egg yolk, when these were added to a mixture of supposedly purified food substances. Lard and olive oil possessed no such properties.[10]

The situation was still not clear. In June, 1912, Osborne and Mendel[11] described experiments in which normal growth curves were secured with rats over a period of sixty days, on a ration consisting of pure protein, starch and "protein free milk," all the constituents being free from substances soluble in ether, and practically free from lipoids of any character.

One phase of the difficulty was cleared up by our observation that when lipoids of suitable character were present in the food mixture, we secured growth when 20 per cent. of the diet consisted of nearly nitrogen free lactose (Merck or Kahlbaum), but were unable to do so when the latter was replaced by starch.[12] Obviously an impurity in the lactose furnished a second unknown dietary factor without which growth could not proceed. The inclusion of lactose with the omission of the fats of milk or egg yolk was, however, attended with failure to secure sustained growth. This was difficult to understand in the light of Osborne and Mendel's temporary success in inducing growth by the employment of ether extracted "protein free milk." The explanation is now available. Simmonds, Steenbock and I[13] have found that the fat-soluble dietary essential is appreciably soluble in water, and that repeated washing of butter fat with distilled water removes from it the substance which is responsible for its peculiar effect in the diet. The water solution of the nonlipoid constituents of milk, therefore, contain this substance, indeed, in considerable amount. Recent experiments lead us to believe that approximately half of the fat-soluble dietary essential is present in the fat and half in the nonfat portion of the milk. It is, therefore, approximately thirty times as soluble in butter fat as in water. "Protein free milk" contains, therefore, both the water and alcohol-soluble dietary essential which is found in many natural foodstuffs and which is the active agent in the cure of polyneuritis, and a small amount of the fat-soluble essential as well.

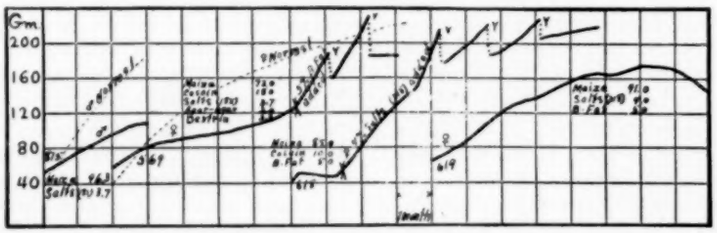

Chart 1.—Results of feeding animals on maize with purified food substances. In this and the following charts, *Y* marks the birth of young.

Observations such as I have described led Miss Davis and me[12] in 1915 to propose the working hypothesis that an adequate diet during growth must furnish, in addition to the well recognized constituents of the diet — protein, carbohydrate, fats and inorganic constituents of adequate character and amounts — two as yet unidentified dietary factors. One is soluble in water and alcohol and apparently never associated with the lipoids, when these are isolated from natural foodstuffs, the other soluble in fats. The latter is extracted from milk, egg yolk, kidney and probably other animal tissues by ether, but is not removed by this solvent from either the seeds or the leaves of plants.[14] The former is universally present in foodstuffs of vegetable and animal origin, but is absent or nearly so from crystalline sugar, starch and fats, and is present in but small amount in polished rice and probably in those foods derived from the endosperm of seeds by milling processes. Where the reaction of the medium is alkaline, strong heating of foods probably leads to its destruction.

Stepp failed to interpret his observations correctly because hot alcohol takes out both of these dietary factors, and when he put back the extract with the extracted residue, both were restored.

Osborne and Mendel could not correctly interpret the cause of their success with "protein free milk" combined with purified foodstuffs because they were adding both these unknown substances, although the amount of the fat-soluble one was inadequate to serve throughout the life of the animal.

I am frequently confronted with the questions: What of the several "vitamins" which have been so eagerly seized on of late to explain such pathologic manifestations as beriberi, scurvy, pellagra and rickets? Do not these several well recognized syndromes, the etiology of each of which is generally believed to be more or less directly referable to inadequate diet, connote the existence of as many "vitamins," each specific in the protection it affords against a type of abnormal metabolism? I am almost convinced that there are but two individual substances, the solubilities and distribution of which I have just described, which constitute the only essential dietary ingredients with whose chemical natures we are not fairly familiar. The possibility remains, of course, that one or both of what I have termed the fat-soluble A and water-soluble B each represent more than a single substance. I shall speak further on this point later.

Employing this working hypothesis, we have examined the nature of the dietary deficiencies of several of the more important natural foodstuffs. The procedure in each case was as follows: The individual foodstuff, maize,[15] for example, we fed (*a*) as the sole source of nutriment; this leads to complete failure of young animals to grow, and death usually supervenes within two months; to another group (*b*) we fed maize plus butter fat to furnish the unidentified dietary factor A; (*c*) maize plus a liberal amount of a complete protein, casein; (*d*) maize plus a salt mix-

10. McCollum, E. V., and Davis, M.: Jour. Biol. Chem., 1913, **15**, 167; ibid., 1915, **23**, 231.
11. Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1912, **12**, 81.
12. McCollum, E. V., and Davis, M.: Jour. Biol. Chem., 1915, **23**, 231.
13. McCollum, E. V.; Simmonds, N., and Steenbock, H.: Proc. Am. Soc. Biol. Chemists, December, 1916; Jour. Biol. Chem., March, 1916.
14. McCollum, E. V.; Simmonds, N., and Pitz, W.: Am. Jour. Physiol., 1916, **41**, 333, 361.
15. McCollum, E. V.; Simmonds, N., and Pitz, W.: Jour. Biol. Chem., 1916, **28**, 153.

ture so constituted as to supplement the inorganic content of maize and give the animal an inorganic supply similar to that which is supplied by milk, a food on which good nutrition with growth is attained. As will appear later, maize contains a liberal amount of the water-soluble B. In all these experiments the behavior of the animals was substantially the same. There was little growth in any case. Of the three additions described, the proper adjustment of the inorganic content is the most beneficial (Rat 815, Chart 1).

Obviously more than a single dietary factor is at fault in determining the failure of young rats to grow on maize. We conducted a series of experiments in which maize was fed with two purified food additions: (*e*) maize, salts and casein; (*f*) maize, salts and butter fat; (*g*) maize, butter fat and casein. The results of feeding such diets are shown by the curves in Chart 1. Rat 569 made somewhat less than half the normal rate of growth over a period of five months when both the protein and inorganic content of maize were supplemented. The addition of butter fat at this time caused extremely rapid growth, and during the following three months two litters of young were born, one, the second, being successfully reared. Rat 619, which received maize, salts and butter fat, grew slower than the normal rate and showed decline after the age of 6 months. She never produced young. Rat 618, which was given maize, casein and butter fat, did not grow at all during a period of six weeks. Four per cent. of a suitable salt mixture was then added, with the result that growth was promptly resumed and the animal reached the full adult size at the normal rate and produced three litters of young, all of which were successfully weaned. These records are each representative of a group of rats.

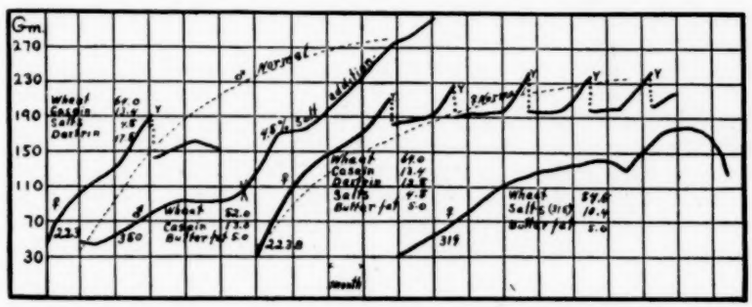

Chart 2.—Results of feeding animals on wheat with purified food additions.

TABLE 1.—COMPOSITION OF SALT MIXTURES

Salt mixture used with Rats 223, 223B and 380 (Fig. 2).	
Sodium chlorid ($NaCl$)	0.668
Dipotassium phosphate (K_2HPO_4)	0.337
Monocalcium phosphate ($CaH_4(PO_4)_2.H_2O$)	0.284
Magnesium sulphate (anhydrous) ($MgSO_4$)	0.018
Magnesium citrate ($Mg_3(C_6H_5O_7).14H_2O$)	0.068
Sodium citrate (anhydrous)	0.037
Ferrous lactate	0.119
Potassium citrate	0.799
Calcium lactate	2.533
Salt mixture 185 (Figs. 1, 4, 6, 8, 10)	
Sodium chlorid ($NaCl$)	0.173
Magnesium sulphate (anhydrous) ($MgSO_4$)	0.266
Monosodium phosphate ($NaH_2PO_4.H_2O$)	0.347
Dipotassium phosphate (K_2HPO_4)	0.954
Monocalcium phosphate ($CaH_4(PO_4)_2.H_2O$)	0.540
Ferrous citrate	0.118
Calcium lactate	1.300
Salt mixture 500 (Figs. 3, 6, 8)	
Sodium chlorid ($NaCl$)	0.5148
Calcium chlorid ($CaCl_2$)	0.2569
Dipotassium phosphate (K_2HPO_4)	0.3113
Potassium citrate	0.5562
Calcium lactate	2.878
Salt mixture 318 (Figs. 1, 2, 6)	
Sodium chlorid ($NaCl$)	1.400
Dipotassium phosphate (K_2HPO_4)	2.531
Potassium citrate	0.710
Calcium sulphate ($CaSO_4.2H_2O$)	0.578
Calcium lactate	7.058

Chart 2 illustrates the behavior of rats with respect to growth and reproduction when fed wheat with two purified food additions,[16] casein and salts, Rat 223; casein and butter fat, Rat 380, and butter fat and salts, Rat 319. Rats in Lot 223 in some instances grew rapidly to full adult size, but all were short lived. At the age of 6 months they were all emaciated and showed edema of the eyelids with hemorrhage of the conjunctiva. In Rat 380, which received wheat, casein and butter fat, growth was very slow. After being stunted during five months, on the addition of a suitable salt mixture the animal experienced a wonderful acceleration of growth and complete recovery from a condition of partial baldness, accompanied by a roughness of the skin and tail. Animals in this group have frequently suffered from a purulent bronchitis.

The stunted growth, lack of fertility and early decline which follows the feeding of wheat with salt and butter fat additions is illustrated by Rat 319. When, however, wheat is supplemented with three purified additions, casein, salts and butter fat, it becomes capable of supporting growth, reproduction and rearing of the young in a manner which closely approaches the optimum, as is shown by the curve of Rat 223 B.

Wheat and maize are therefore closely similar in their dietary properties. Each requires an improvement in its protein moiety, a suitable supplementing of its inorganic content and an added supply of the dietary factor which I have designated the fat soluble A. Each contains an abundance of the second unidentified dietary essential, the water soluble B, since without any addition of this substance, excellent nutrition can be secured.

Let us consider for a moment the dietary properties of the oat kernel[17] as revealed by feeding it supplemented with single or multiple additions of purified foodstuffs. It becomes apparent from an inspection of Chart 3 that the same general relations hold as we have seen in the case of the maize and wheat kernel. The curves are each representative of the performance of a group of not less than four rats. Here, however, the addition of casein, salts and butter fat does not lead to normal nutrition. We have not yet been able to supplement oats with purified food ingredients and attain optimum results, when the oat kernel constituted from 70 to 80 per cent. of the food mixture. Gelatin combined with oat proteins forms a much better protein mixture than do casein and oat proteins. This will be made apparent by an inspection of Chart 6, Rat 647. (Compare Charts 6 and 3.) We have not yet determined the cause, but it is evident that a high intake of oats over a long period causes injury to the rat. This is true also for the cow, and I believe also for swine.

The results of testing combinations of two or more kinds of seeds as a restricted diet has proved extremely interesting. The curves of four representative rats

16. Hart, E. B., and McCollum, E. V.: Jour. Biol. Chem., 1914, **19**, 373. McCollum and Davis: Ibid., 1915, **21**, 615. Hart, E. B.; Miller, W. S., and McCollum, E. V.: Ibid., 1916, **25**, 239.

17. McCollum, E. V.; Simmonds, N., and Pitz, W.: Unpublished data.

receiving diets made up on this plan are shown in Chart 4.[17] It proved a great surprise that we were not able to make combinations of the seeds of plants in any way which forms a ration capable of inducing normal growth in the rat, and an extensive experience has all tended to confirm our belief that this is true for swine and probably for other mammals as well. It is possible, however, with rations restricted to seeds, to secure nutrition of at least a fairly satisfactory character with pigeons[14] and possibly also with chickens. Chart 4 shows clearly the dietary factor which forms the most important cause in inhibiting the growth of the rat on these diets. It is the character and amount of the inorganic portion of the food mixture. When this is properly adjusted by means of salt additions, growth can proceed on certain mixtures. After prolonged suspension on Ration 713, the addition of salts led to growth. Equally pronounced failures with rations of this type containing beans or peas are abundant in our records.

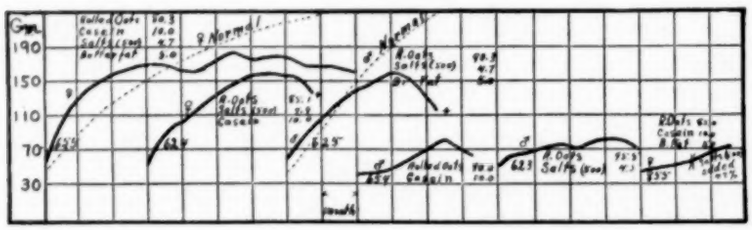

Chart 3.—Results of feeding animals on oats with purified food substances.

In marked contrast to our failure to secure satisfactory nutrition with any of the many combinations of from two to five kinds of seeds stand the nearly normal growth of rats which are limited from an early age to a monotonous mixture of a seed and a leaf. We have tested most thoroughly combinations of the alfalfa leaf with several seeds, since it can be secured as a meal and as a flour, the former being much employed in animal production. The products which we have employed were very fine meal consisting principally of the leaves, but containing visible pieces of stem, and also a flour which was practically entirely derived from leaves. Both products came from immature plants dried in the sun.

Chart 5 illustrates the fact that rats can take from the age of 35 days a mixture of 60 per cent. of any one of at least three seeds, oats, wheat and maize,[17] with 40 per cent. of alfalfa leaves, and grow to a size closely approximating the normal, and produce young. The same proportions between polished rice and alfalfa,[14] peas and alfalfa,[16] and cottonseed flour and alfalfa[17] yield less satisfactory results, but with these growth is far superior to what we have ever observed with the seeds alone in any combinations or proportions, when fed to rats whose water supply was distilled, and therefore salt free.

On Ration 685, oats and alfalfa,[17] fourteen out of the seventeen young were reared. The one litter of five produced by Rat 687 all died soon after birth. Four of the seven young in the litter from Rat 686 were reared. No young have been reared on the polished rice and alfalfa mixture (Rat 478).

Two factors contribute toward making these combinations of seed and leaf superior to seeds alone. First, the inorganic content of the leaf is much greater and is of an entirely different character from that of the seed. In Table 2 are given the average analyses of alfalfa hay, cabbage, wheat, oat and corn kernel, potato and milk.

It is fortunate, indeed, that the inorganic content of the seed and the leaf supplement each other in a manner which meets the demands of mammalian physiology. The second way in which the leaf supplements the grain is in respect to the as yet unidentified dietary factor, fat-soluble A. This substance is present in the alfalfa leaf to the extent of at least five times the amount in the maize kernel, so that any diet containing 30 per cent. or more of this leaf is not enhanced by the inclusion of butter fat. Cabbage and clover leaves also are rich in this dietary essential, but our experience with these is less extensive. There is to be expected, of course, a supplementary relationship among the proteins of a mixture of two or more foodstuffs. It could hardly happen that the proteins from several sources would be particularly low in their content of the same amino acids. That the limiting amino acid is not the same in several of the more important seeds is made evident by the curves shown in Chart 6. Rats 652 and 493 received a similar food mixture, except that the former had 10 per cent. of gelatin supplementing wheat proteins in place of an equivalent amount of dextrin. The gelatin-containing

TABLE 2.—AVERAGE ANALYSES OF VARIOUS FOODS IN ONE HUNDRED PARTS OF DRY SUBSTANCES*

	Total Ash	K	Na	Ca	Mg	Cl	P	S
Alfalfa..	7.380	1.641	0.097	2.146	0.223	0.298	0.338	0.172
Cabbage	10.850	2.510	0.805	1.663	0.234	0.853	0.853	0.372
Wheat...	2.080	0.504	0.026	0.041	0.141	0.058	0.408	0.069
Oat.....	1.830	0.361	0.058	0.097	0.086	0.098	0.385	0.005
Corn.....	1.450	0.350	0.012	0.023	0.136	0.013	0.289	0.005
Potato..	3.79	1.890	0.083	0.072	0.113	0.131	0.279	0.099
Milk.....	5.67	1.160	0.344	0.909	0.088	0.791	0.650	0.057

* From Forbes, Bull. 207, Ohio Expt. Station.

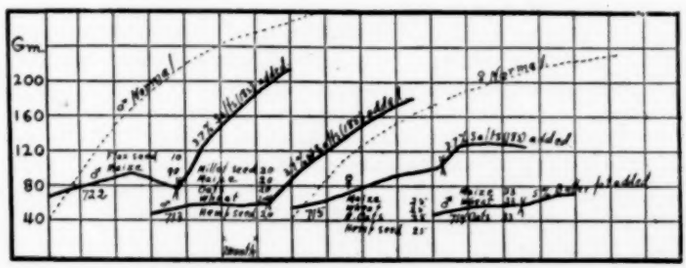

Chart 4.—Failure of rats to grow when restricted to a diet of seeds. The limiting factors are the inorganic content and the fat soluble A.

diet promoted growth at a rate greater than the normal expectation, as compared with a rate about half normal in the gelatin-free control.[18]

The second pair of curves, Rats 756 and 785, received rations alike in all respects, except that in the former the protein content (19.9 per cent.) was derived solely from a mixture of peas and gelatin[17] and the latter from a mixture of navy beans and gelatin.[17] In neither do the rations promote appreciable growth, although the entire group receiving beans grew noticeably better than did those getting peas. Gelatin does not supplement efficiently the proteins of either the pea or bean. In the second period in each

18. McCollum, E. V.; Simmonds, N., and Pitz, W.: Jour. Biol. Chem., 1917, **28**, 483.

case casein was substituted for the gelatin with the result that growth began at once at a fairly good rate. The proteins of the pea or the bean, when taken as the sole source of nitrogen, are of very low biologic value.[17]

An inspection of the curves of Rats 647 and 646 shows that gelatin has a very favorable supplementary relation to the oat proteins.[18] Gelatin when combined with the proteins of the maize kernel does not enhance the value of the latter.[18]

In 1914 we repeated the efforts of Slonaker[19] to find the effects of a strictly vegetarian diet of wide variety, on the growth of the rat. We offered nineteen different foods of vegetable origin, giving the animals five or six at a time and changing their bill of fare at intervals of a few days. The list of foods included grains, leaves of plants, nuts, corn and wheat germ, peas and flaxseed meal. None ever grew beyond half the adult size.[14] We duplicated in all essentials the results which Slonaker had observed. Having gained some insight into the peculiar dietary properties of certain natural foods, I predicted two years ago that a mixture of maize 50, alfalfa leaves 30 and heated peas 20 would adequately nourish a young rat during growth. A trial proved that this strictly vegetarian food mixture induced satisfactory nutrition during growth, and supported repeated reproduction and rearing of a fairly large percentage of young.[14] Chart 7 shows the curves from left to right of mother, daughter and granddaughter. A litter of great grandchildren were successfully weaned and appeared entirely normal when we discontinued the experiment. I should like to emphasize the importance of a proper adjustment of the well recognized dietary factors by pointing out that no young would be reared if this diet were changed to include less than 20 or more than 45 per cent. of alfalfa, the maize replacing or being replaced by alfalfa in the adjustments.

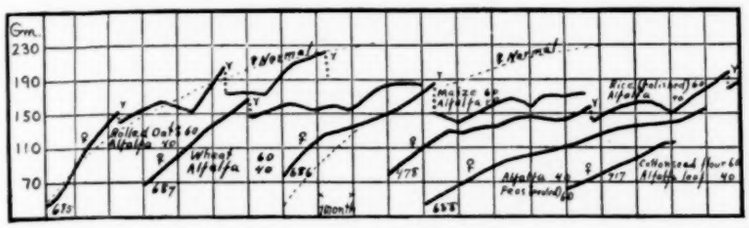

Chart 5.—Good growth promoting ration which a combination of one leaf and one seed may produce.

In Chart 8 are shown representative curves showing the failure of the proteins of either peas or navy beans to supplement very efficiently the proteins of the maize kernel,[17] Rats 779 and 780. In either of these rations the peas or beans could be replaced by dextrin, and a curve of nearly the same shape would be secured. Both pea and bean proteins improve the proteins of the wheat kernel,[17] Rats 783 and 784, for these curves are much better than would be secured if the legume seed were replaced by carbohydrate (Chart 1, Rat 619; Chart 2, Rat 319). The most remarkable result of studying these combinations is seen in the very different results of supplementing oat proteins with bean proteins as contrasted with peas. Pea proteins are wasted when combined with those of the oat, while the proteins of the navy bean and oat mutually make good each other's deficiencies,[17] Rats 782 and 781. It follows, therefore, that the proteins of the pea and the bean are very dissimlar in respect to their yields of certain amino acids, and that the same amino acid is not the limiting factor in each.

In Chart 9 are presented curves obtained with a series of diets designed to show the relative richness of the fat-soluble A in several natural foodstuffs. The diet, aside from its content of natural food, consisted of such a mixture of purified food materials as would support growth, when both the unidentified dietary factors, the fat-soluble A and water-soluble B, are added. The rôle of the natural food in these rations was to supply these two factors.[17] These curves make it clear that about 30 per cent. of alfalfa leaf is the minimum amount which will supply the fat soluble A in amount sufficient to induce complete growth and induce the production of a few young. The young were not reared on this ration. In Charts 1, 2 and 3, curves were shown which illustrate that even 70 per cent. of corn, wheat or oat kernel do not furnish enough of the dietary A to support complete growth and repeated reproduction and well-being over the full span of life.

It is of particular interest, therefore, to compare the effects of flaxseed and millet seed as sources of the fat soluble A. Both of these are richer in this substance than are the cereal grains, and millet seed proves to be unique among the seeds we have examined as a good source of this dietary factor. When 25 per cent. of millet seed was combined with purified foodstuffs, growth was completed and one rat has produced two litters of young. After eight months on this diet she appears to be in perfect nutrition. The slow but long continued growth on these rations, whose content of both unidentified dietary factors was solely derived from such small amounts of hemp seed, flaxseed and millet seed, shows that these stand intermediate between the cereal grains on the one hand and the plant leaf on the other as sources of the fat-soluble A.[17]

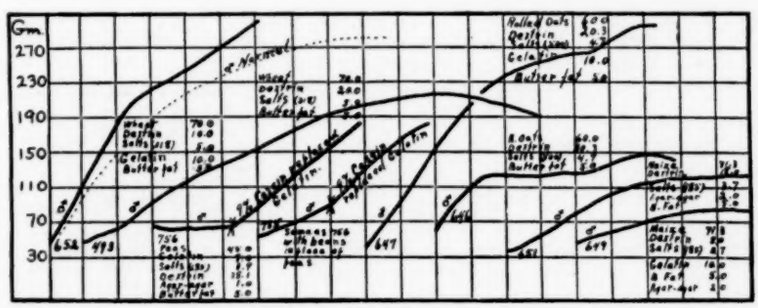

Chart 6.—Value of gelatin in supplementing the deficiencies of the wheat and oat kernel, but not those of maize, beans or peas.

We have carried out a series of experiments designed to show the minimum amount of several seeds which are necessary to supply enough of the water-soluble dietary essential for the completion of growth and the production of young. Chart 10 illustrates the results of this inquiry. The diet in all cases consisted of a purified food mixture, to which was

19. Slonaker, J. R.: Leland Stanford Junior Univ. Pub. Univ., Series 1912.

added 5 per cent. of butter fat to insure an adequate supply of the fat-soluble A. The sole requirement of the portion of natural food incorporated in the food mixture was to furnish the water-soluble B.

While 15 per cent. of either maize or oat kernel fails to induce growth at the maximum rate, 15 per cent. of wheat not only enables the animals to complete their growth, but also induces sufficiently good nutrition to lead to repeated reproduction. However, no young can be reared on either of the two lowest wheat rations here described. The factor which is responsible for this failure is the low content of the water-soluble B (Chart 2, Rat 223 B). Peas and beans likewise are shown to be rich in this dietary essential,

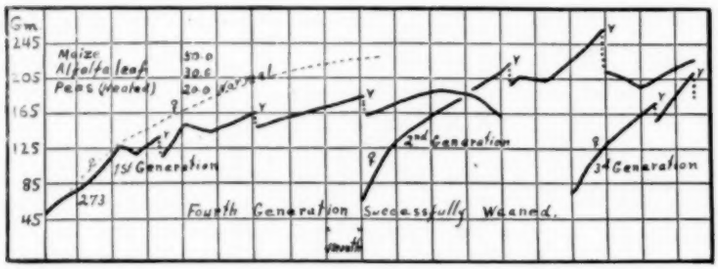

Chart 7.—Results of feeding a properly constituted, strictly vegetarian diet to the rat.

but they are both poor in the fat-soluble one.[17] The fact that Rats 744 and 743 did not respond promptly with renewed growth on the addition of an alcoholic extract of wheat germ containing additional water-soluble unknown is without significance. After a long period of stunting, response to improved diet is not always immediate. Diets deficient in one factor only and for this reason leading to suspension of growth do not all lower the vitality of the animals in the same degree. The extent of the debility determines whether they can respond promptly with growth when the diet is improved.

I desire next to attempt to offer an interpretation of certain experimental and clinical evidence which may seem to be out of harmony with the simple working hypothesis regarding the essential factors which are concerned in making a diet adequate, and with which I have attempted to explain the cause of the failure of animals to be adequately nourished on a considerable number of diets from various sources. I refer especially to the theory of Funk, which has found wide acceptance, that no less than four syndromes recognized as distinct pathologic states, namely, beriberi, scurvy, pellagra and rickets, are all referable to inadequacy of the diet, and that each is the result of the lack of an adequate amount of a particular chemical substance in the food. To these Funk gave the general name "vitamins." In seeking the cause of the inadequacy of certain diets I have dispensed with all but two unidentified substances.

There are two lines of evidence which offer strong support of the validity of the assumption that in the case of the factor which I have called the water-soluble B we are dealing with a single substance rather than with two or more. The first is based on the results of feeding such rations as are described in Chart 10 in which all of this factor is supplied by as little as 15 per cent. of wheat, or 25 per cent. of peas or beans, alfalfa, etc. We have tested a list of foods which includes four grains (wheat, oat, maize and millet), two legume seeds (peas and beans), three varieties of leaf (clover, alfalfa and cabbage), and three oil seeds (hemp, flax and cottonseed), and find that in all these about 15 to 20 per cent. is all that is essential, with a mixture of purified foodstuffs and butter fat, to promote growth at the normal rate. While this does not establish the conclusion, we may reasonably expect that if the dietary factor B consisted of two or more chemical substances essential for normal metabolism, we should discover in some of these natural foodstuffs a shortage of one as compared with the other, in greater degree than is actually the case.

The second line of evidence which supports the idea that we are here dealing with a single chemical substance rather than several is to me still more convincing: A mixture of purified food substances becomes capable of inducing vigorous growth when 3 per cent. of wheat germ supplies the factor B and 5 per cent. of butter fat the factor A. Now the wheat embryo can be completely extracted with ether without losing its potency in the least degree. The ether extracted residue we have extracted for eighteen hours in a continuous extractor with hot benzene in one instance and with hot acetone in another. The extracts obtained with benzene or acetone will not induce growth when combined with the purified food mixture containing butter fat, even when the extract equivalent to 28 per cent. of wheat germ is added. In either case, however, 3 per cent. of the ether-benzene or ether-acetone extracted residue is still as effective as ever. Now rats which are at all depleted with respect to the factor B do not recover when only 2 per cent. of wheat germ is present in the ration. They do recover from a condition of extreme weakness, and partial paralysis on our ration with the extracted germ to the extent of but 3 per cent. While large doses of the material extracted from wheat germ by

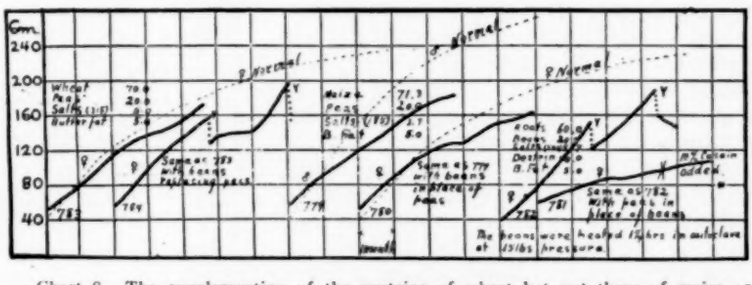

Chart 8.—The supplementing of the proteins of wheat but not those of maize or oats by the proteins of the pea. The supplementing of the proteins of wheat and oats, but not those of maize, by bean proteins.

hot benzene or acetone contain enough of the factor B to cure a pigeon of polyneuritis, the amount of the curative substance extracted by these solvents is almost negligibly small.

The point I would emphasize as of significance in these results is the very small probability that if there were present two or more chemical substances indispensable for the maintenance of physiologic well-being, both or all should be practically completely insoluble in both these solvents as well as ether, and that both or all should be readily soluble in water and in alcohol. It would seem a remarkable coincidence if several compounds should show such complete uni-

formity in their solubilities, stability toward heat and so close a parallel in the proportions in which they occur in the seeds and leaves of widely different orders of plants. When contrasted with the great variation in the content of the fat-soluble essential in different seeds, and the richness of the leaf as compared with the seed in its content of this substance, it becomes the more improbable that in plant tissues generally there should exist a definite proportion between the remaining essential substances, whatever their number.

I am conscious of the question which will be asked concerning the cause of scurvy and of beriberi. Are not these both dietary deficiency diseases? During

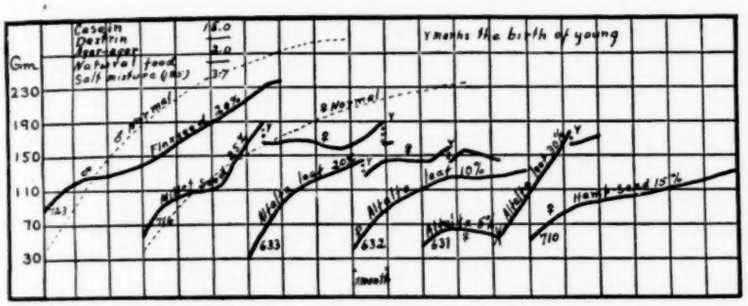

Chart 9.—Purified foodstuffs with small natural food additions; no butter fat.

the past two years Mr. Pitz and I[20] have repeated all the more important work reported by others on the production by diet of experimental scurvy in the guinea-pig. We have confirmed the observations of Jackson and Moore to the effect that with a diet of oats and milk *ad libitum*, scurvy ordinarily results. Rolled oats induce the onset of the symptoms sooner than unhulled oats. Only those diets which produce feces of a character readily eliminated will relieve or prevent the disease. Milk to the extent of 10 per cent. of the solids of the diet supplies all the unidentified dietary factors necessary for growth in the rat or swine and probably for other mammals as well. We are convinced that the guinea-pig suffers from scurvy on a diet of oats and milk because of the constipating character of the diet. Oats produce pasty feces, and the guinea-pig, being unfortunate in the anatomy of its digestive tracts, is quickly debilitated by its inability to empty the large and delicate cecum. This harmonizes with our observation that orange juice, the panacea for scurvy in the human infant, gives protection to the guinea-pig, but is not so efficient as to enable this species to take an oat and milk diet and grow continuously over a long period. We have furthermore been able to effect a complete cure of guinea-pigs on a milk and oat diet after they could no longer walk, and showed badly swollen joints and the hemorrhage of the gums, by liberally dosing them with liquid petrolatum. Cavies so relieved have been as active and healthy as if on a diet of green grass, and have resumed growth and have continued to grow steadily, though at a rate slower than the normal during three months following the attack of scurvy, while confined to the same milk and oat diet which gave them the disease. The petroleum oil treatment was of course persevered in throughout this period. I question whether any one would postulate the existence in petroleum oil of a "vitamin" specific as a protection against scurvy.

I venture to suggest that the failure of Holst[21] and his co-workers to prevent or relieve scurvy in guinea-pigs by feeding dried cabbage finds its explanation in the failure of the latter to take up water in the intestine and again act as a succulent vegetable.

On the basis of anatomic lesions and for other reasons, Hess[22] has recently suggested that scurvy and beriberi show more points of similarity than have been recognized by clinicians, and was inclined to consider the two as essentially the same pathologic condition. His efforts toward curing scurvy with wheat germ and with yeast were unsuccessful, whereas orange juice was potent as a curative agent, and he was forced to conclude that the two conditions were distinct. I will offer the suggestion that the latter view is correct. Scurvy in the guinea-pig is the result of the retention of feces. I do not know whether or not the same is true of human scurvy. Neither do I know the cause of the hemorrhage of the joints and gums, whether they are the result of the absorption of a toxic substance of bacterial origin, which injures the blood vessels, or whether they are due to the invasion of the tissues by an organism, through an injured cecal wall. The recent observation by Jackson and Moore of a streptococcus in the congested joints is suggestive in this connection.

I am inclined to attribute the protective power of orange juice as an antiscorbutic to its content of certain salts of citric acid, rather than to the presence of an unidentified organic substance of the class of the so-called vitamins. Its efficiency for the guinea-pig appears to be somewhat less than for the human being. This may well find its explanation in the much more delicate and inefficient structure of the digestive tract of the cavy as compared with that of man, so that less efficient protective agents may serve for the latter than

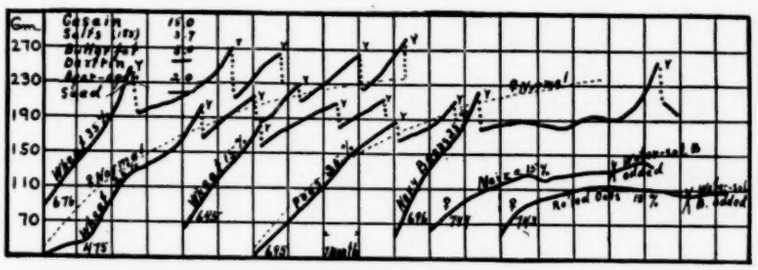

Chart 10.—Purified foodstuffs with small natural food additions, with butter fat.

for the former. While guinea-pigs are protected against scurvy by orange juice, we have not seen them grow to any appreciable extent on a diet of oats and milk fortified with orange juice. If the results of experiments of three months' duration are to be trusted, orange juice appears no more efficient than petroleum oil in protecting guinea-pigs against scurvy when the animals are kept on a diet of oats and milk.

That beriberi is a disease of dietary origin there is no doubt. That it can be relieved in the fowl by the

20. McCollum, E. V., and Pitz, W.: Unpublished data.

21. Holst and Frohlich: Ztschr. f. Hyg. u. Infektionskrankh., 1912, **72**, 1.

22. Hess, A. F., and Fish, Mildred: Infantile Scurvy: the Blood, the Blood Vessels and the Diet, Am. Jour. Dis. of Child., December, 1914, p. 385. Hess, A. F.: Infantile Scurvy: THE JOURNAL A. M. A., Sept. 18, 1915, p. 1003; Proc. Soc. Exper. Biol. and Med., 1915, **13**, 50; ibid., 1916, p. 145; Am. Jour. Dis. Child., August, 1916, p. 152.

extracts which contain the dietary factor B is equally certain. Much less definite statements can be made regarding the other diseases, rickets and pellagra, which Funk has attributed to lack of specific substances in the diet. The evidence, as I understand it, seems to point strongly toward diet as at least an important contributing factor. Assuming that they as well as beriberi are of nutritional origin, I venture to state that they are the result of unsatisfactory adjustments among the well recognized constitutents of the diet rather than to the lack of specific chemical substances. I have shown how diets may be so designed as to induce faulty nutrition as the result of the shortage of each of the two unidentified dietary factors A and B; of the inadequacy of the protein content, because of an unsatisfactory yield of amino acids and as the result of an unsatisfactory composition or inadequate amount of the inorganic content of the food mixture. I may add to these a fifth, namely, malnutrition as the result of the presence of toxic substances in the natural foodstuffs, particularly cottonseed and wheat products, and perhaps also a sixth cause due to mechanical injury to the digestive tract caused by foods (for example, oats) producing feces of unfavorable character, and by constant distention of the alimentary tract as the result of excessive fermentation of foods, such as beans and peas, which contain a large amount of hemicelluloses.

I have attempted to show, so far as experimental data are available, the specific dietary properties of our natural foods, and how these may be so combined as to make good each other's deficiencies and shortcomings. In presenting these data it has also been emphasized how great is the need of more knowledge in this field. It is indeed remarkable how difficult it is to secure combinations of natural foods which will serve as monotonous diets over a long period and promote in an entirely satisfactory way the well-being of an animal. The consumption of a varied diet makes in some degree for safety, but will by no means insure safety. It remains to be seen whether or not the animals which we have brought to a condition of nutritive disaster by a series of diets, each of which was faulty in respect to but a single dietary factor, as inorganic salts or protein, or the unknown A or B, will reveal to the histologist and pathologist lesions analogous to those seen in the states of human malnutrition presumably of dietary origin. The inadequate diets of man are probably never highly satisfactory with respect to all factors but one. Rather they are in some degree unsatisfactory with respect to two or three dietary factors simultaneously, and the probability that they will be so increases greatly as the food supply tends to be limited to the seeds of plants, and such manufactured products as are derived from the endosperm of seeds. The time will doubtless come within a few years when specific advice can safely be given as to the best way to plan a variety of human dietaries; but a consciousness of the paucity of our knowledge concerning the peculiar supplementary relationships among our natural foodstuffs forbids more than a general statement as to the safest policy now.

A diet in which the seeds of plants form the principal part will be made more safe by the judicious use of milk and of the leaves and probably also of the tubers of plants. These have peculiar dietary properties which the best chemical talent of today fails to recognize, but which are readily demonstrable by biologic tests.

APPLICATION OF THE COMPLEMENT-FIXATION TEST TO TUBERCULOSIS

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During recent years much experimentation has been carried out in determining the value of complement-fixation reactions for the diagnosis of tuberculosis.

Results obtained by different workers show considerable variation. When, however, it is remembered that the value of the test is entirely dependent on the specific action of the antigen and that the antigens used by the many investigators have been prepared by widely divergent methods, it is to be expected that the results should be somewhat dissimilar. At best, we are but feeling our way toward a common understanding of the relation which our laboratory findings bear to the disease itself, and the test will eventually be established as of practical value only by a thorough comparison of all careful investigations rather than by the consideration of the work of any one person.

Several experimenters have obtained results of much promise, but on account of cross fixations with syphilitic serums or because of positive reactions in a certain percentage of nontuberculous cases, the test has not seemed sufficiently reliable to warrant its ready adoption as a routine test in diagnostic laboratories.

Miller and Zinsser[1] of Columbia University, New York, claim an accuracy of nearly 100 per cent. for complement fixation in the detection of active tuberculosis. They used an antigen made up of ground tubercle bacilli in physiologic sodium chlorid solution.

Preparation of this antigen is thus described:

"Twenty mg. of the moist tubercle bacillus mass are weighed out, placed in a conical 15 c.c. centrifuge tube, and to it are added 90 mg. of table salt. With a glass rod, filed to roughness at the end, this paste is ground by hand for about one hour. Distilled water is then added to isotonicity, that is, 10 c.c. to the quantities described above. This is the antigen. Just before using, it is shaken up and the heavier particles are allowed to settle in the course of a few minutes. Except for the removal of these larger elements, the suspension is used as a whole without centrifugation and without filtration."

It seemed to us that it would be of much interest and value to run a series of tests with the Miller antigen since the Miller figures, if confirmed by other investigators, place the test on as accurate a basis as can be claimed for the Wassermann reaction.

Through the courtesy of Dr. Carl C. MacCorison, superintendent of the North Reading State Sanatorium, and of Dr. F. X. Mahoney, health commissioner of Boston, arrangements were made for the

1. Miller and Zinsser: Proc. Soc. Exper. Biol. and Med., 1916, **13**, 134-138.

furnishing of specimens together with brief, but carefully drawn, histories of the cases from the sanatorium, and for the opportunity of running the tests in the health department laboratory.

In addition to the "Miller antigen," S. A. Petroff's Antigens 1, 2 and 3 were also carefully tested in some of these cases.[2] In our hands, however, these antigens did not give as good results as did Miller's antigen. This was especially true of Petroff's Antigen 1 on account of its rapid deterioration. Petroff's Antigens 2 and 3 gave results consistent with those obtained by Miller's antigen, but were measurably weaker.

It was decided to make two series of experiments, the first to consist of specimens from patients with known tuberculosis in order that the laboratory men might become familiar with the reactions to be expected, while the second series was to consist of specimens from all grades of tuberculous, from non-tuberculous, and from doubtful cases. The last class of cases was to provide some indication as to the test for specificity.

The blood specimens were drawn in the usual manner from patients and employees at the North Reading State Sanatorium. This institution has a resident population of 200 patients and a large staff of employees. The bloods were sent directly to the laboratory by messenger usually on the same day as they were drawn.

GROUP 1.—KNOWN TUBERCULOUS PATIENTS

Anticipating some variation in the reactions of the serums which the first group of seventy-seven known tuberculous patients were to afford, we decided at the outset that some simple classification of the cases tested would be necessary. As a basis for this arrangement there were prepared brief typewritten statements, one for each patient from whom a blood specimen was to be drawn, giving a clear account of the stage of disease and, more particularly, of the clinical picture existing at that time. These notes were then set aside for study when the laboratory findings were reported.

TABLE 1.—RELATION OF RESULTS TO STAGE OF DISEASE PROGRESS IN SEVENTY-SEVEN KNOWN TUBERCULOUS PATIENTS

Reaction	Far Advanced	Advanced	Moderately Advanced
Strongly positive	3	28	5
Moderately positive	2	15	1
Weakly positive	2	8	1
Delayed negative	3	7	1
Negative	0	1	0
Totals	10	59	8

The stage of disease roughly indicates the extent of lung involvement. Table 1 gives the relation of results to the stage of disease progress. It appears that the far advanced class gave on an average the weakest reaction, while the advanced class averaged a much stronger reaction, and over one half of the still earlier moderately advanced class gave a strongly positive record. The last fact is significant when one considers the practicability of the test for diagnostic purpose, its value in this set of experiments seeming greater for the earlier rather than the later stage of the disease.

2. A description of these antigens may be found in the proceedings of the Twelfth Annual Meeting of The National Association for the Study and Prevention of Tuberculosis, 1916, p. 214.

The evidence seems to favor the belief that the amount of complement-fixing bodies in the blood may measure the patient's resistance against the disease progress, for clinically, resistance is at a very low ebb in the far advanced patient.

A patient having advanced pulmonary signs may yet have an excellent resistance, while another patient having a much smaller lung focus is overcome by the intensity of the disease reaction. Accordingly, the classification by stage of disease was not sufficiently broad to allow for all the variations in results.

TABLE 2.—RELATION OF RESULTS TO THE CLINICAL CONDITION OF SEVENTY-SEVEN KNOWN TUBERCULOUS PATIENTS

Reaction	Gaining		Holding		Losing
	Exercise	Rest	Exercise	Rest	
Strongly positive	9	8	5	9	5
Moderately positive	5	0	1	8	4
Weakly positive	2	2	0	3	4
Delayed negative	0	0	0	1	10
Negative	0	0	0	0	1
Totals	16	10	6	21	24

A second table, dealing with the first group of seventy-seven known tuberculous patients having positive sputum, shows the relation of results to the clinical condition of the cases tested.

For practical purposes clinically we wish to know whether a patient is gaining or losing in general condition or remaining stationary. Furthermore, we wish to know the patient's reaction to exercise. Experience might show in a given case that a patient would gain if at rest in bed, or at least on a minimum amount of exercise, and yet would quickly relapse and show disease activity on a slight increase in exertion. Another patient would gain steadily, even though his exercise was proportionately increased.

These two patients would each be classed as "gaining," and yet there would be a material difference between the measures of their resistance and also between the intensities of their respective infections. Therefore, under "Gaining" and "Holding," in Table 2, a distinction is made according to whether or not the patient is on daily exercise or at rest. It is understood that patients losing are not on exercise.

A patient's resistance from the point of view of sanatorium treatment is in this way measured by the amount of exercise he can stand without showing clinical signs of disease activity. Craig[3] has shown that a case may be clinically inactive and yet have an active infection, as would appear from a positive complement-fixation test. Unless we made some attempt to show the conditions under which the patient is active or inactive clinically, we believe that classification would not be complete.

In Table 2 it will be noted that there were ten delayed negative and four weakly positive reactions in the "losing" class of patients. Three of these fourteen patients have since died, succumbing to a rapidly progressing disease. Here again we see that a weakly positive or negative reaction is coincident with a rapidly failing resistance. On the other hand, one patient reacting as weakly positive while suffering an acute relapse returned a strongly positive reaction several

3. Craig, C. F.: Observations upon Complement Fixation in The Diagnosis of Pulmonary Tuberculosis, Am. Jour. Med. Sc., 1915, **150**, 787.

weeks later when he had pretty well recovered from this indisposition. Therefore, it would seem that complement fixation in a way discloses the amount of resistance which the patient clinically active has available with which to fight disease activity.

Table 2 shows little difference between the reactions occurring in the exercise and rest columns. It should be remembered, and some discount made for the fact, that the patients gaining on exercise are getting better and that therefore their disease processes are lapsing into quiescence; therefore their serums would not give such regularly positive results as do those of patients gaining or holding but not on exercise, in many of whom there must be invariably active foci. There may be inactive foci in patients of the latter class which on the slightest stimulation from exercise would readily become active and perhaps be evidenced by clinical symptoms. This sort of inactivity would be in harmony with a "weakly positive" complement-fixation reaction in the holding but not on exercise class.

In the nonexercise class with probable active foci and with clinical findings promising considerable resistance to the disease, positive reactions, as shown by the table, appeared in a large majority of the cases, for the most part patients who have a strong resistance to the infection and either are gaining or holding their own.

Of the fourteen negative or delayed negative cases, six were apparently arrested cases, three were gaining with exercise, two were holding their own with exercise, one was holding with rest, while two were definitely losing. In these fourteen patients with varying physical conditions, there must appear to be one agreed and common condition, and that is that their blood contained but small amounts of antibodies to the tubercle bacillus. In twelve of the cases this might be on account of quiescence of the disease, while in the other two it might be explained by a lack of resistance to an overwhelming infection.

Of nineteen cases designated as probably nontuberculous, three gave a strongly positive reaction. The histories of these three patients as taken at the time the specimens were forwarded are as follows:

CASE 1 (1892).—I 35, W. B. "Doubtful." This man is an employee, but was one time a patient at the sanatorium with bronchiectasis, probably nontuberculous. His sputum was never positive for tubercle bacilli, and the physical signs in his lungs were atypical for tuberculosis. This man is holding up well as an employee and working a full day.

TABLE 3.—COMPARISON OF LABORATORY FINDINGS WITH CLINICAL HISTORIES

Reaction	Tuberculosis						Probably Nontuberculous	Healthy	Stage of Disease				Positive Sputum
	Gaining		Holding		Losing	Arrested			IV	III	II	I	
	Exercise	Rest	Exercise	Rest									
Positive	7	5	3	3	2	2	3	0	1	9	9	1	16
Moderately positive	2	1	1	0	1	2	0	0	1	1	4	0	2
Weakly positive	1	0	0	1	2	1	2	0	0	1	2	0	3
Delayed positive	2	0	1	1	0	2	3	2	0	2	2	0	5
Negative	1	0	1	0	2	4	11	9	0	3	1	0	4
Totals	13	6	6	5	7	11	19	11	2	16	18	1	30

while patients "gaining" or "holding" who give weak positive reactions may be those in whom the disease is quiescent; therefore these patients present no active resistance.

GROUP 2.—PERSONS WHOSE CONDITION AS RELATED TO TUBERCULOSIS WAS UNKNOWN TO THE LABORATORY WORKERS

The second group of patients tested comprised those with pulmonary tuberculosis, those doubtfully tuberculous, and healthy persons. In all seventy-eight specimens were submitted from this group. Tables 3 and 4 illustrate this material with respect to the reaction obtained.

Notes on the clinical conditions of the patients were prepared at the same time as the bloods were drawn and in the same manner as for those in Group 1. Also, statements were made if the individuals were healthy or believed to be nontuberculous. These notes were set aside and not referred to until the laboratory findings were reported. In this way there was no opportunity for bias of opinion either by the laboratory man or clinician when the results were summed up and coordinated.

A study of Table 3 shows that out of forty-eight cases of clinical tuberculosis twenty-nine gave a strongly or moderately positive reaction, while fourteen were either delayed negative or negative. Those giving a strongly or moderately positive reaction are

CASE 2 (2252).—J 62, Celia D. "Doubtful." Probably nontuberculous; has bronchitis secondary to asthma. Sputum always negative for tubercle bacilli after repeated trials. We believe strongly that this patient has not tuberculosis, although she is a sick girl and only improved lately from a bed case. She has pulmonary disease, also a luxuriant growth of nasal polyps, and a negative complement-fixation reaction would help very much as a differential guide.

CASE 3 (2172).—J 10, E. M. "Doubtful." Patient examined recently but no disease activity noted in lungs. He gave up exercise mentioned in the last note saying that he was not feeling well; however, he felt able to go out on his four days' visit. Patient's sputum has never been positive for tubercle bacilli, and the only lung lesion made out is a possible old healed focus at the left apex. Patient has probably chronic endocarditis and at any rate mitral regurgitation and stenosis. Signs in lung may be referable to cardiac disease.

It is probable that these three cases are tuberculous.

Two more cases with weakly positive findings must still be considered doubtful, while the evidence in the other fourteen indicates absence at least of any active tuberculosis. These fourteen patients are on active exercise except one in whom the signs and symptoms differentiate in favor of cardiac disease rather than pulmonary infection.

The eleven specimens from healthy persons were all either negative or delayed negative.

Leaving out of consideration the eleven "arrested" cases, we have thirty-seven cases of active tuberculo-

sis. There are but three cases in Stages I and IV of the disease all giving positive findings. Of the eighteen cases in Stage II, fifteen, or 83 per cent., were positive, and eleven of sixteen cases, or 69 per cent., in Stage III.

As shown in Table 3, there were but thirty of these seventy-eight cases with positive sputums. Deducting eleven cases of healthy persons having no signs of tuberculosis leaves thirty-seven cases in which this valuable diagnostic aid was absent. To one skilled in the examination of such patients, many of these could be classed as tuberculous with but little difficulty. By the average physician, however, many of these cases might be classed as nontuberculous because of the negative sputum. It is in this class of patients especially that a complement-fixation test would be of value to the attending physician as an aid in diagnosis. These cases may be summarized in Table 4.

We are inclined to believe that the three positive cases which were classed as probably nontuberculous when the specimens were taken may have active lesions which were not revealed by the physical examination.

In this table also it will be noted that there are four cases "probably tuberculous" but reacting negatively. Two represent specimens from the same patient who apparently had an arrested case. The other two cases are also apparently arrested.

TABLE 4.—CASES WITH NEGATIVE SPUTUM, DIAGNOSIS DOUBTFUL

Reaction	Probably Tuberculous	Probably Nontuberculous
Positive	6	3
Moderately positive	5	0
Weakly positive	2	1
Delayed negative	1	6
Negative	4	9
Total	18	19

Since the Boston Health Department Laboratory is doing the Wassermann test as a routine procedure, it was decided to test all serums submitted for this specific test with the tubercle bacillus antigen. In this way some light might be thrown on the matter of cross-fixation. A total of 912 such tests was made. Of these 221 were positive and 691 were negative for the Wassermann reaction.

Of the 221 positive Wassermann tests, complement fixation for tuberculosis gave 21 positive, 13 moderately positive, 16 delayed negative, and 171 straight negative. Of the 691 negative Wassermann tests, 55 reacted positively for tuberculosis, 35 moderately positive. There were 21 delayed negative and 580 negative reactions.

We were unable to obtain clinical histories in many of these cases to confirm the specificity of the tuberculous reactions; but the evidence seems conclusive that there is no cross-fixation with syphilitic serums.

The percentage of positives, 15, seems higher than would be expected; but when we consider that tuberculosis causes the death of about one person in every ten and that careful observers calculate at least three living active cases to each death, perhaps this percentage is not excessive, especially among that class of patients who appear for free Wassermann tests.

From our observations it appears that the test is specific for tuberculosis, although perhaps the number of tests from nontuberculous cases is too few for a definite statement to that effect. Miller[4] reports: "Nontuberculous and normal patients react negatively: 144 cases: all negative."

In the diagnosis of tuberculosis it is not to be expected or desired that the complement-fixation test should replace the ordinary examination of sputum for tubercle bacilli. It is our opinion, however, that the test will prove of great value as an aid to diagnosis in cases showing suggestive physical signs but in which it is impossible to demonstrate the presence of tubercle bacilli in the sputum.

In such cases positive complement fixation reactions would be strong evidence of the disease. A single negative would be inconclusive, but several negatives would indicate that no active tuberculous process was present.

It will also be useful to determine whether a case of tuberculosis clinically apparently arrested still has an active focus as indicated by a positive reaction.

CONJUGAL TABES DORSALIS*

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Tabes dorsalis, unfortunately often spoken of as locomotor ataxia, has received in comparatively recent times a vast amount of attention at the hands of the medical profession. Owing to the frequency with which it occurs, tabes takes the first place among spinal cord diseases. With the advent of laboratory methods, more or less specific as indexes of syphilitic conditions, interest was renewed in the study of this disease entity, and I feel that it may be safely stated that it is now held that syphilis plays the all important rôle as the true etiologic factor in the production of this disorder. Although Esmarch and Jessen as early as 1857 discussed the relationship between syphilis and paresis (and we have every reason to believe today that the cerebral manifestations of paresis and the cord manifestations of tabes are one and the same as far as etiology is concerned), it was not until the discovery of the exciting organism, the *Spirochaeta pallida*, by Schaudinn and Hoffmann, and later the perfection of the work of Wassermann, that the relationship, as prophesied by these early investigators, was fully established

Krafft-Ebing has well said that "civilization and syphilization go hand in hand." Fortunately for the human family, however, not every person who becomes infected with syphilis is doomed to become a paretic or a tabetic. More and more the thought is being advanced today that perhaps it requires some special strain or change in the quality of the syphilitic organism to produce latent and destructive lesions of the central nervous system. In evidence of this, Brosius[1] points to the contamination of a number of glass-blowers from the use of a mouthpiece which was the property of a fellow workman who had a syphilitic lesion about the mouth. Of those becoming thus infected, over 50 per cent. later developed either paresis or tabes. Other evidence is also on record in which men, worshiping at the shrine of Venus and

4. Miller, H. R.: The Clinical Value of Complement Fixation in Tuberculosis, THE JOURNAL A. M. A., Nov. 18, 1916, pp. 1519-1521.

* Read before the Chicago Neurological Society, March 15, 1917.

1. Brosius, cited by Dercum: Clinical Manual of Mental Diseases, p. 258.

receiving a syphilitic infection from a common source, later developed, entirely or in a large proportion, either paresis or tabes dorsalis. Further proof of the variability of the spirochetal strains is not wanting also when the literature is scanned and one finds the infection of husband and wife, both of whom are tabetic or paretic, or else one is tabetic and the other is paretic.

That syphilis, coming in contact with an unstable nervous system, may play an exceedingly important rôle in the production of either tabes or paresis is not to be overlooked or even to be underestimated. In support of this, the neuropathic theory, we find no less able a syphilographer than Nonne, who contends that "neuropathy plus syphilis equals paresis." Näcke likewise is a firm believer in neuropathy as a factor in the production of paresis, and maintains that only a congenitally weakened brain is capable of developing this disease. This writer further holds that in at least 45 per cent. of paretics, a history of neuropathy is obtainable. In view of these assertions concerning paresis, there remains no alternative save to grant that what is true of paresis must hold equally so of tabes, since the presence of the exciting organism of syphilis has been demonstrated in the neural axes of persons dying from undoubted paresis and tabes. On the other hand, it would appear that such factors as trauma, alcoholism, excesses, overfatigue, and exposure to cold are merely contributory and have not the power in themselves to produce such profound changes in the brain and cord as are characteristic of the destructive lesions of nervous syphilis.

Dismissing for the moment a further consideration of syphilis in the light of newer investigations, let us now turn our attention to a consideration of the conjugal type of tabes. The occurrence of tabes dorsalis in husband and wife was first recorded by Voigt in 1885. Kjellberg in 1863, however, was the first to report the occurrence of paresis in husband and wife. Since these early reports of recognized conjugal tabes and paresis, medical literature has not been altogether wanting in similar case reports, yet when one realizes the comparative frequency with which tabes or paresis is encountered, it is rather striking by contrast to find so few cases of the conjugal type. Eshner,[2] in 1911, added two new cases of conjugal tabes to medical literature, one case observed in private practice, the other in the outpatient department of the Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases, in the service of Dr. John K. Mitchell. I recall during my internship in this institution a case of the so-called mixed type, in the outpatient department, then under the service of the late Dr. Wharton Sinkler. The husband showed undoubted evidence of paresis, while the wife manifested typical tabetic symptoms. Since the publication of Eshner's paper, medical literature has been extremely deficient in articles pertaining to this subject. This paucity is well emphasized, since reference was found to but one article on the conjugal type.[3]

To the cases already on record, I add an instance in which both husband and wife were suffering from symptoms of tabes dorsalis:

REPORT OF CASES

Man, aged 66, married, referred to me during latter part of December, 1912, complained chiefly of urinary incontinence, inability to walk properly, and periodic attacks of pain involving the trunk and lower extremities. The onset of his trouble dated back twelve or thirteen years, but he stated that during the last three or four years his condition had progressively grown worse.

The family history was entirely negative regarding any direct bearing on the case as an etiologic factor. The patient was the tenth living child and had never had a serious illness prior to the onset of his present trouble. He had been a farmer for the greater part of his life, subsequently doing work in a railway freight department until his gradually failing health had forced him to give up work of all kinds. He admitted gonorrhea at 18, but denied ever having had syphilis.

The onset of his present illness had begun when he was about 50, and was ushered in by vague pains, often transient in character, involving the legs and chest. Gradually certain phases of gastro-intestinal disturbances became noticeable, as evidenced by flatulence, dyspepsia, constipation, and periods of diarrhea. Numbness across the abdomen was for a time present, later to be replaced by a typical "girdle sensation." Weakness of the sphincter muscles, especially those of the bladder, was noticed early. At times there were pains in the fingers, but no history of distinct ulnar paresthesia could be elicited. Gradually there was difficulty experienced in walking as the condition progressed, and during the last three or four years the ataxic phenomena dominated the clinical picture.

Examination of the nervous system revealed marked ataxia of both the upper and the lower extremities. The right pupil was larger than the left one and was irregular in outline. The Argyll Robertson phenomenon was present. The ocular movements were good in all directions. The knee and ankle jerks were absent, even by the Jendrassik method. The flexor plantar reflex was sluggish. The tendon jerks of the upper extremities remained intact.

There was a girdle-like hyperesthesia of the chest in an area corresponding to the distribution of some of the mid-dorsal segments. So marked was the hypersensitiveness anteriorly that even to touch the skin of this area with the bell of a stethoscope caused great discomfort. The painful area could almost be mapped out with precision by the presence of dirt which had been allowed to collect for months, owing to the severe discomfort and pain of any attempt at bathing or washing the parts. In contrast with this sensitive condition was the blunting of the sensory impulses coming from the lower extremities. Delay in the transmission of sensation was readily noticeable, and analygesia of the Achilles tendons was pronounced.

The patient was greatly emaciated and worn out by long continued suffering. In addition to his tabetic pains, much discomfort ensued from a chronic cystitis and urinary incontinence. The Wassermann reaction was weakly positive, owing no doubt to previous antispecific treatment. A lumbar puncture was refused.

Several months later, a perforating ulcer made its appearance on the plantar surface of the right foot at the base of the great toe. The patient always maintained, however, that this ulcer was the direct outcome of an injury which he had received years before when he unfortunately injured the parts by stepping on a nail.

A year later death ensued, and was due largely to a lobar pneumonia complicating the all too numerous complications. Necropsy limited to the brain and cord revealed an absence of any active inflammatory condition. The brain appeared healthy, and macroscopically was free from lesions. The posterior columns of the cord, especially in the lumbar and lower dorsal segments, were greatly atrophied, and cross sections revealed, even to the naked eye, a flattening and a shrunken appearance of the dorsal columns.

Of no less interest, perhaps, is a consideration of the wife's condition. Shortly after my first visit to the home, the woman rather surprised me by stating that she believed that she had contracted the same condition in caring for her husband and administering to his needs. She was the eighth child of a family of ten children, and was never strong and healthy as a

2. Eshner, A. A.: Conjugal Tabes Dorsalis, THE JOURNAL A. M. A., June 17, 1911, p. 1797.
3. Mareau, P., and Narcy, C.: Progrès. méd. 1912, **28**, 417.

girl, although she never had a serious illness during childhood. The menses first appeared when she was 12; the periods were more or less painful, the flow scant. At 18 she married, and during the term of her active sexual career (the climacteric being established at 46 years of age) she had nine miscarriages and one stillbirth. No primary or secondary features of syphilis were ever observed. When 51 years of age, or approximately about the same time that her husband first manifested his early tabetic symptoms, she began to have vague pains in the lower extremities. At first transient in character, these pains had more recently become sharp and lancinating, and were said to be aggravated by barometric changes. Unsteadiness of gait, especially after dark, developed, and diplopia of a transient character added to her difficulties. Three years following the onset of her trouble, weakness of the urinary and rectal sphincters were ushered in. At times a girdle sensation was noticed, and an ulnar paresthesia became exceedingly troublesome.

This patient was 56 at the time of examination. Her voice was small and weak, and savored of a nasal twang. Her gait was distinctly ataxic, and the Romberg symptom was ++. The pupils were somewhat miotic, equal, regular in outline, and were of the Argyll Robertson type. No optic atrophy was observed. The extrinsic muscles of the eyes acted in a normal manner. There was no ataxia of the upper extremities. The knee and ankle jerks were absent, even by the reinforcement method. The blood serum gave a negative Wassermann test. Unfortunately, a lumbar puncture was refused.

It may not be altogether out of place to state that under energetic antispecific treatment, a decided abatement of the subjective symptoms was obtained. At present this patient is residing in one of the far western states.

RELATIONSHIP OF SYPHILIS AND TABES

Church[4] holds, after a careful consideration of the prevalence of syphilis, that one is clearly within conservative lines to estimate that one man in every five is syphilitic. If this is true, then of no less import is a further statement that every case of syphilis, from the very incipiency of the infection, is once and for all, primarily, a case of nervous syphilis. These statements, to say the least, are astounding, and if valid cannot help but have great bearing on the future consideration of this disease.

The predilection of syphilis for nervous tissue is well known, and to a degree may be satisfactorily explained on strictly embryologic grounds. Every syphilographer and dermatologist knows well that syphilis is a disease which clinically, in characteristic cases, is potent to form well marked skin lesions. This point, then, on the selective action of the disease would appear to be well taken when one considers that both nervous and skin tissues have their origin from ectoderm, the outer layer of blastodermic membrane. In a further consideration of the selective action of syphilis on the body tissues, it would not be unreasonable to assume that, in those cases manifesting the latent effects of syphilitic action on nervous tissue, disorders of the skin and mucous membranes are insignificant or entirely absent. In other words, the so-called secondary symptoms of syphilis would appear to play an exceedingly minor rôle in those cases which later are so prone to develop the late or so-called tertiary manifestations of the disease. The truth of this statement, I think, will be amply borne out by those who have carefully considered the histories of patients suffering from tabes or paresis. Here, the absence of marked secondary phenomena would appear to be the rule, rather than the exception. This leads to the natural conclusion that the battle waged by the products of syphilis in such cases is one mostly, if not entirely, against nervous tissue, allowing the cutaneous structures a respite against the invasion of so formidable an adversary.

The occurrence of conjugal tabes or paresis, I think, is merely a strengthening link in the chain of evidence, showing that the spirochetes are capable of variation, and that under circumstances perhaps not as yet well understood, strains are transmitted which are capable of producing those destructive lesions of the central nervous system sometimes encountered even in the conjugal state.

407 Equitable Building.

4. Church, Archibald: Some Modern Views of Syphilis of the Nervous System, THE JOURNAL A. M. A., May 20, 1916, p. 1596.

THE PROPHYLAXIS OF ANESTHESIA ACIDOSIS *

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For surgical practice, chemical methods of investigation are beginning to have a field of usefulness comparable with the one they occupy in clinical medicine. In gathering data to indicate the character of the operative risk, it has been customary for a long time to employ urinalysis, blood counts, hemoglobin determinations and estimations of the arterial tension. At present it seems advisable frequently to add to these precautionary measures the determination of what has been called the "alkali reserve," for postoperative nausea and vomiting, menacing convalescence, may depend on an acidosis for which the anesthetic is responsible.

The underlying facts regarding the regulation of the equilibrium between the acids and bases of the animal body were contributed by the research of the Haldane school of physiologists, by Hasselbach, Lawrence Henderson and later by others. Under normal circumstances the acid-base equilibrium is remarkably stable; Haldane found that in healthy individuals the balance was accurately maintained over long periods of time. The mechanism involved in the maintenance of the equilibrium is a complicated one, but its main features are: (1) the elimination of carbon dioxid by the lungs; (2) the excretion of acid salts by the kidneys and sweat glands; (3) the presence of "buffer" substances in the blood which include the bicarbonates, phosphates and probably proteins; (4) the production of ammonia at the expense of urea, and (5) the influence of the barometric pressure (oxygen tension) to which the individual is accustomed, a factor as yet imperfectly understood.

It has been demonstrated, then, that the lungs take a leading part in the regulation of the acid-base equilibrium of our bodies. The carbon dioxid which the lungs excrete has acid properties; when in the blood it is neutralized through combination with alkali. The blood contains, moreover, an amount of available alkali in excess of that needed for the neutralization of carbon dioxid, and this excess has been designated the alkali reserve. This may be estimated indirectly by several methods, for example, by the determination of the carbon dioxid in the alveolar air, or of the capacity of the blood plasma to combine with carbon dioxid.

It is well known, of course, that an undue collection of acid products in the body is harmful, and against

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such a contingency the regulatory mechanism which I have just outlined is provided. But this mechanism may not act effectively, or the production of acids may be abnormal either in kind or in amount. Certainly, the most familiar example of acidosis arising from faulty or incomplete metabolism is that attended with the excretion of acetone and diacetic acid in the urine. In a typical case there is a fruity odor to the breath, and there are also hyperpnea, vomiting and prostration. On account of the chemical structure of the acid responsible for acetonuria, this type of acidosis is defined more specifically as a ketosis. In other cases of disturbed metabolism, acids which do not belong to the ketone series are formed. However, the specific nature of the toxic substance involved has not yet been recognized in every kind of acidosis; the classical instance of a proved specific causation is beta-oxybutyric acid in cases of diabetic coma.

In cases of vomiting and diarrhea during infancy and childhood, Howland and Marriott[1] demonstrated the presence of a true acidosis, employing methods now in general use for the recognition of this condition. Thus, in the acidosis of infants, the carbon dioxid tension in the alveolar air is decreased; the hydrogen ion concentration of the blood is raised, and the excretion of ammonia through the urine is increased. All these phenomena are indicative of a shifting of the reaction of the blood and tissues in the direction of lessened alkalinity, and this may be offered as defining in general the modern conception of acidosis.

Long before clinical methods existed for the study of the alveolar carbon dioxid and for the analysis of the blood, it was supposed that anesthesia frequently induced an acidosis, for acetone was demonstrable in the urine of patients suffering from persistent postoperative vomiting. From Deaver's clinic, Bradner and Reimann[2] reported acetonuria in 61.7 per cent. of postoperative cases. Crile and his associates also emphasized the value of studying the respiration in these cases and recommended that this examination be made before an anesthetic is administered, in order to test the patient's "operative resistance." Employing Michaelis' gas-chain method, Crile[3] found an increase in the hydrogen ion concentration of the blood in postoperative cases, and by the method of Van Slyke demonstrated a diminution in the alkali reserve. These effects he ascribed to emotion, starvation, exhaustion, interference with respiration, hemorrhage and to the anesthetic itself. Similarly, Austin and Jonas[4] observed in six cases that the alkali reserve was less after operation than previously, a result which my observations confirm.

The method I employed was briefly as follows: A specimen of blood was obtained several hours before the operation and another directly after it ended. The blood was collected under liquid petrolatum in small centrifuge tubes containing a few crystals of potassium oxalate. It was centrifugalized immediately, and the plasma drawn off with a pipet. Usually, the analysis was completed at once; but if not, the specimen of plasma was kept on ice in a paraffin-lined tube.

The analysis followed the Van Slyke technic and was carried out with the apparatus he described. The plasma was first brought into equilibrium with alveolar air. This was done by blowing through a wash bottle filled with glass beads which removed the moisture; thence the air was conducted into a separating funnel containing the plasma for analysis. The composition of the air thus employed was frequently tested by a simple apparatus for the analysis of alveolar air and blood gas devised by Yandell Henderson, a description of which he will soon publish. It was found that the amount of carbon dioxid in the air used to saturate the plasma varied but slightly, namely, between 5.5 and 6 per cent.

After the plasma had been brought into equilibrium with alveolar air, it was introduced into the Van Slyke apparatus; there, after the addition of acid, the carbon dioxid was liberated by means of a vacuum and measured. The figures in the tables are so calculated as to give the volume of carbon dioxid (reduced to 0 C. and 760 mm.) which 100 c.c. of plasma are capable of binding at 20 C.

The significance of the carbon dioxid combining power of the plasma, it will be remembered, depends on the fact that in a general way the basic substances there perform two functions: first, they enter into combination with carbon dioxid, and second, they neutralize acids formed in the course of normal or perverted metabolism. If the latter are formed in amounts which require for neutralization an unusually large proportion of these basic substances in the blood, a smaller proportion remains available for combination with carbon dioxid. In this way the extent to which the plasma combines with carbon dioxid becomes a measure of the acid bodies in the blood. A low carbon dioxid combining power denotes a tendency toward an acidosis or the actual existence of one. In an average normal individual, 100 c.c. of plasma combines with

TABLE 1.—CARBON DIOXID COMBINING POWER OF THE BLOOD BEFORE AND AFTER OPERATION

No.	Description of Operation	Duration of Anesthesia—Ether	C.c. of CO_2 Bound by 100 c.c. Plasma		Difference	Reaction of Urine
			Before	After		
1	Dilation and curettage	20 minutes	55.9	45.2	10.7	Acid
2	Pelvic puncture	20 minutes	56.4	54.7	1.7	Acid
3	Dilation and curettage	25 minutes	51.6	43.8	7.8	Acid
4	Suspension, perineorrhaphy	50 minutes	47.2	33.2	14.0	Acid
5	Hysterectomy, perineorrhaphy	1 hr. 10 min.	45.0	34.4	10.6	Acid
6	Hysterectomy, perineorrhaphy	1 hr. 15 min.	45.0	38.2	6.8	Acid
7	Hysteromyomectomy	1 hr. 20 min.	56.9	34.2	22.7	Acid
8	Hysteromyomectomy	1 hr. 30 min.	58.2	53.0	5.2	Acid
9	Suspension, perineorrhaphy	1 hr. 35 min.	45.2	44.8	0.4	Acid
10	Hysterectomy, perineorrhaphy	2 hours	42.1	34.4	7.7	Acid

1. Howland and Marriott: A Discussion of Acidosis with Especial Reference to That Occurring in Diseases of Children, Bull. Johns Hopkins Hosp., 1916, **27**, 63-69.

2. Bradner and Reimann: Observation upon the Elimination of Acetone and Diacetic Acid in Two Hundred and Fourteen Surgical Cases, Am. Jour. Med. Sc., 1915, **150**, 727.

3. Crile: The Phenomenon of Acidosis and Its Dominating Influence in Surgery, Ann. Surg., 1915, **62**, 257; A Discussion of Certain Criteria of Acidosis and Their Clinical Application, Am. Med., 1916, **22**, 447.

4. Austin and Jonas: Clinical Studies of Acidosis, Am. Jour. Med. Sc., 1917, **152**, 81.

65 c.c. of carbon dioxid (Van Slyke, Stillman and Cullen;[5] and Gettler and Baker[6]). "The great majority of observations were between 50 and 60 c.c., and no normal plasma showed a value below 55." Furthermore, experience indicates that a lower value than 30 c.c. must be reached before there is serious distress from the acidosis itself. Very low values are encountered in cases of diabetic and uremic coma.

In the majority of the cases in Table 1, the initial observation was below 55, and this fact indicates that either the preliminary preparations for operation, which include the withdrawal of food for from twelve to twenty-four hours, or, perhaps, some other feature of the patient's physical condition was responsible for a moderately subnormal capacity of the plasma to combine with carbon dioxid. Not unlikely, this in itself is a feature of practical moment, bearing on the "operative risk." However, that problem is not one with which we are immediately concerned. At first we wish to know what effect the administration of the anesthetic has on the alkali reserve of the blood. To measure this effect the carbon dioxid combining power of the plasma was estimated both before and after anesthesia. What was the result?

In every case there was a lower value at the conclusion of the operation than had been observed previously. The difference does not vary directly either with the duration of ether anesthesia or with the extent of the operation. Thus, with a simple dilation and curettage requiring twenty minutes, the drop is almost identical with that in the case of a panhysterectomy requiring two hours. Similarly, the alkali reserve may decrease notably when the patient loses relatively little blood, and on the other hand may not change greatly when conspicuous hemorrhage occurs. As none of these patients exhibited more than usual postoperative vomiting, it was not surprising that at the conclusion of the anesthesia the carbon dioxid combining power of the plasma was well above the danger limit in every case.

Aside from the fact that lower values obtained constantly at the conclusion of operation than before, these observations did not settle any of the questions we wished to have answered, and in particular they gave no definite information regarding the time when the drop in alkali reserve took place. Consequently, animal experimentation was required, and three dogs were studied.[7] A sample of blood for a control observation was aspirated from the femoral artery before general anesthesia was begun, the necessary incision having been made under novocain. Subsequently, samples were secured at intervals of half an hour. Chloroform was used in one case and ether in two. Of the latter animals, one died from the effects of the anesthetic at the end of two hours. The results of these experiments are given in Table 2.

PROTOCOLS

EXPERIMENT 1.—Feb. 9, 1917. Large, male mongrel dog. Weight, 59 pounds. Morphin, ½ grain, before observation began. Control specimen of blood taken. Anesthetic started at 2:30 p. m.; 80 c.c. of chloroform were administered during one and a half hours. Blood was obtained at half hour intervals from the femoral artery. Respiration stopped five times during the experiment, but started again promptly following the use of resuscitatory measures.

EXPERIMENT 2.—Feb. 16, 1917. Large, male coach dog. Weight, 56 pounds. Morphin, ½ grain, before observation began. Control specimen taken. Anesthetic started at 1:30 p. m.; 750 c.c. of ether were administered during two hours. Blood was obtained from the femoral artery except after death, when it was taken at once from the ventricle. The dog stopped breathing after two hours of anesthesia, the pulse ceasing simultaneously with respiration; the animal could not be revived. Necropsy revealed no anatomic lesions.

EXPERIMENT 3.—March 4, 1917. Male black and white mongrel. Weight, 43 pounds. Morphin, ½ grain, before observation began. Control specimen of blood taken; 650 c.c. of ether were given during the two hours of anesthesia. Blood was obtained from the femoral artery.

These observations teach that a notable drop may occur in the carbon dioxid combining power of the plasma during the first half hour of the anesthesia. However, in one animal the readings were practically alike until an hour and half elapsed; then the readings were lower. Since the initial drop is succeeded by a rebound, it appears not unlikely that in this case (Ether, Dog 2) the low point was missed because it was reached before the expiration of the first half hour of anesthesia. With the continuation of anesthesia in dogs, after the rebound, a gradual lowering of the capacity of the plasma to combine with carbon dioxid occurs.

It is noteworthy that the initial depletion of the alkali reserve is more marked in the case of chloroform. Whether or not this phenomenon is intimately associated with the accidents not infrequently reported at the outset of chloroform narcosis is not answered, of course, by these experiments; but it is not without interest that we find evidence of a serious change in the blood reaction near the outset of chloroform anesthesia.

As the only variables in the experiments on dogs were the anesthetic employed and the duration of its administration, the results are conclusive in showing the influence of ether and chloroform toward decreasing the alkali reserve. And since similar results obtained in human beings receiving operative treatment of various kinds and in dogs, we may conclude that in the former the anesthetic was at least the chief factor in lowering the carbon dioxid combining power of the plasma.

Having verified previous observation to the effect that lower values obtain for the alkali reserve after

TABLE 2.—CARBON DIOXID COMBINING POWER OF THE PLASMA IN DOGS UNDER ANESTHESIA

Anesthetic	C.c. of CO_2 Bound by 100 C.c. of Plasma				
	Control	½ Hour	1 Hour	1½ Hours	2 Hours
Chloroform	51.06	28.5	37.1	26.7	....
Ether, Dog 1	52.5	40.05	49.7	40.05	29.8 (Dead)
Ether, Dog 2	42.4	44.3	42.4	33.8	32.8

5. Van Slyke, Stillman and Cullen: The Nature and Detection of Diabetic Acidosis, Proc. Soc. Exper. Biol. and Med., 1915, **12**, 165.
6. Gettler and Baker: Chemical and Physical Analysis of Blood in Thirty Normal Cases, Jour. Biol. Chem., 1916, **25**, 211.
7. I am indebted to Drs. J. M. Flint and J. M. Slemons for the opportunity to make these observations in connection with their own study of anesthesia now in progress.

operation than before, and having studied its fluctuations at suitable intervals during anesthesia, we were prepared to determine what influence on this phenomenon the administration of sodium bicarbonate would have. There have been, of course, not a few advocates of this prophylactic measure against the development of postoperative vomiting (Buckler,[8] Burnham,[9] Crile); but as far as I know there has been no attempt to test its efficiency by means of blood analysis.

That sodium bicarbonate will actually increase the capacity of the plasma for combining with carbon dioxid is a well known fact which I have had opportunity to verify. Thus, in a case of obscure toxemia of pregnancy, at the ninth month, associated with persistent vomiting and a marked acidosis the carbon dioxid combining power of the plasma was increased from 26.4 to 62.2 volume per cent.; and in another case,[10] probably of Weil's disease, it was increased from 20.6 to 80.6 volume per cent. following the administration of sodium bicarbonate.

The treatment adopted in the second group of cases studied before and after operation consisted in the administration of 15 gm. of sodium bicarbonate during a period of thirty-six hours preceding anesthesia. Occasionally this dosage was not sufficient to render the urine alkaline and, therefore, 30 gm. were given.

The first result of this treatment was to cause a moderate increase in the alkali reserve, though frequently even this precaution failed to lead to values before operation as great as Van Slyke considers the lower normal limit. More impressive is the fact that the ultimate depletion was less marked in the patients taking sodium bicarbonate preliminarily. In some cases there was practically no difference between the analysis made before and after operation; the average difference when sodium bicarbonate was given was about half that observed when it was not given. But, generally, anesthesia caused the same type of change previously observed, though it was much less marked. This fact appears in the strongest light, if the contrast is made in another way. Thus, in these two groups of cases, the one treated preliminarily with sodium bicarbonate, the other not, the former left the operating room with about the same alkali reserve with which the latter group entered it.

Very little, if any, clinical difference was noted in the postoperative condition of the patients in the two groups. However, there was no opportunity to study a case presenting a seriously low alkali reserve before operation, a situation, naturally, which would offer the severest test of this therapy. The average surgical case, obviously, does not require the administration of sodium bicarbonate before operation, but whether or not it should be given may be determined only by some test which will indicate the extent of his alkali reserve. Therefore, the routine estimation of this factor of safety is desirable. The rate of respiration should be observed, and Yandell Henderson's[11] simple test for acidosis employed — the ability to hold the breath for the normal period of forty seconds. If there is a suspicion that the alkali reserve is not what it should be, one of the clinical methods for estimating it should be employed. Probably, the simplest and most widely applicable of these is the determination of the percentage of carbon dioxid in the alveolar air by Henderson's technic, or the determination of the alkali reserve of the blood by the Van Slyke or the Henderson apparatus. When either test indicates the need for additional alkali, sodium bicarbonate should be given until the urine becomes alkaline or neutral; and after operation its administration either by mouth or by rectum should be continued.

TABLE 3.—ALKALI RESERVE OF THE BLOOD BEFORE AND AFTER OPERATION (WHEN SODIUM BICARBONATE WAS ADMINISTERED PRELIMINARILY)

No.	Description of Operation	Duration of Anesthesia	C.c. of CO_2 Bound by 100 c.c. Plasma		Difference	Reaction of Urine
			Before	After		
1	Dilation and curettage	25 minutes	52.0	38.6	13.4	Alk.
2	Laparotomy, drainage abse.	35 minutes	58.9	55.1	3.8	Acid
3	Oophorectomy	45 minutes	49.8	46.3	3.5	Neut.
4	Suspension	55 minutes	47.2	49.1	—1.9	Alk.
5	Version and extraction	1 hour	57.0	47.2	9.8	Acid
6	Hysteromyomectomy	1 hour 20 min.	56.8	50.1	6.7	Alk.
7	Wertheim suspension	1 hour 40 min.	59.5	57.4	2.1	Acid
8	Repair of complete tear	1 hour 45 min.	56.7	57.7	—1.0	Alk.
9	Operation for prolapse	2 hours 20 min.	47.9	39.3	8.6	Alk.
10	Suspension, perineorrhaphy	2 hours 30 min.	61.9	49.1	12.8	Alk.

TABLE 4.—AVERAGES OF OBSERVATIONS BEFORE AND AFTER ANESTHESIA

	C.c. of CO_2 Bound by 100 C.c. Plasma		Difference	Number of Cases
	Before	After		
Without bicarbonate	50.7	41.7	9.0	10
With bicarbonate	54.7	49.0	5.7	10

CONCLUSIONS

1. The capacity of the plasma for combining with carbon dioxid is decreased after ether and chloroform anesthesia; in other words, one influence of the anesthetic is toward depletion of the alkali reserve.

2. During the first half hour of anesthesia, this factor of safety is notably modified, and the drop is more profound in the case of chloroform than of ether.

3. The initial drop in the alkali reserve is followed by a rebound: from that level there is a gradual decrease until the conclusion of anesthesia.

4. Preliminary administration of sodium bicarbonate increases the alkali reserve, though the most noteworthy effect of this treatment is to lead to higher values for this factor of safety at the conclusion of the anesthetic.

5. The administration of this drug before operation is a rational precautionary measure against postoperative vomiting.

8. Buckler: Prophylaxis of Postanesthetic Vomiting; Am. Jour. Surg., 1914, **28**, Q. Suppl. Anesth., 13.

9. Burnham: The Administration of Glucose Solutions as a Prophylactic Against Postoperative Shock, Am. Jour. Med. Sc., 1915, **150**, 431.

10. Through the courtesy of Dr. Wilder Tileston.

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GASTRIC AND DUODENAL INFUSION BY MEANS OF THE DUODENAL TUBE

A NEW PROCEDURE IN POSTOPERATIVE TREATMENT *

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MINNEAPOLIS

The duodenum was first utilized for infusion in a group of dangerous biliary infections by McArthur.[1] Maury[2] used a duodenostomy opening for this purpose in the experimental laboratory. Since Matas[3] found it impossible, in some cases of cystic or of common duct obstruction, to instil fluids into the duodenum by the simple drip method through the biliary fistula, he passed a fine catheter through the biliary tract into the duodenum. It occurred to me that the passage of a catheter by mouth into the duodenum would be preferable to the biliary route, since it could be used in other than biliary fistula cases and would be more certain than the drip into the biliary drain. To the technic of a gastro-enterostomy or a stomach resection, McArthur[4] has recently advocated adding the performance of a temporary biliary fistula made in the normal gallbladder.

The use of the biliary route to the duodenum in cases in which a fistula would ordinarily be made, for the treatment of some pathologic condition of that tract, would not increase the dangers of infection, of permanent fistula, or of shock from prolonging the operation; but a biliary fistula made for the purpose of duodenal infusion, in addition to some other operation, would decidedly increase those dangers, and would have a marked disadvantage over a method as simple in performance as the passage of a duodenal tube by mouth.

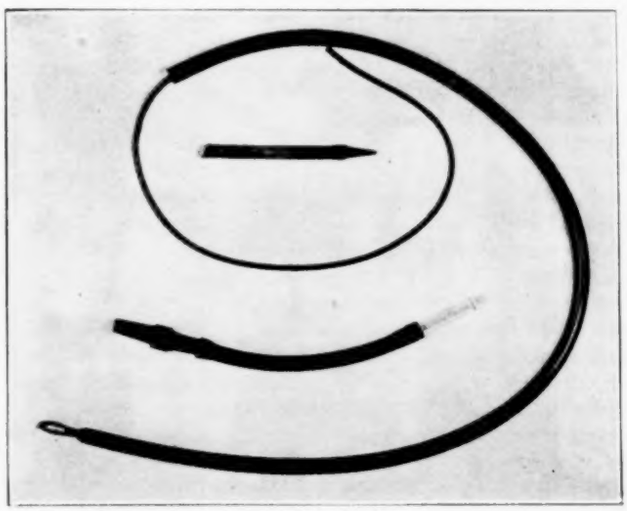

Fig. 1.—Duodenal tube placed inside of stomach tube to facilitate passage into stomach.

A review of the literature has convinced me that the use of the duodenal tube for infusion, in postoperative treatment, is a new procedure. Hemmeter[5] and Kuhns[6] were the first to construct tubes that passed the pylorus successfully. Since these tubes were somewhat bulky and complicated in construction, they did not come into general use. In 1910, Einhorn[7] and Gross[8] each constructed a small flexible rubber tube with a metal tip which has been successful for passage into the duodenum, and even into the jejunum. More recently Palefski[9] showed a smaller and heavier tip to be of advantage, while Hess[10] and others have employed an ordinary small catheter in infants. For use in stomach lavage, Kanavel[11] has added a wire carrier to aid the passage of this type of tube.

The duodenal tube up to this time has been used for diagnosis and for therapy in medical cases. It has been used to collect material in disease of the duodenum, the pancreas and the biliary tract, to determine the degree of hemolysis, and to obtain cultures for typhoid.[12] Gross[13] used direct lavage of the duodenum in chronic catarrh, in persistent jaundice and in gallstone colic, with good results. Skaller[14] used various medications applied directly to the duodenum. Einhorn[15] and others early used the tube for duodenal feeding in gastric and duodenal ulcer. Medical men have found feeding and medication through the tube to be of value in persistent vomiting, due to pregnancy, nervousness, stenosis and pylorospasm (in infants, Hess[10]); in stomach disease, due to ulcer, atony, chronic dilatation, and ptosis; and in cachectic conditions, due to pernicious anemia, tuberculosis and chronic fevers. Einhorn[16] states that in cirrhosis of

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12. These uses of the duodenal tube have been discussed by:
Hess, A.: A Method of Obtaining Cultures from the Duodenum of Infants: Collected Studies from the Bureau of Laboratories Dept. of Health, City of New York, 1912-1913, **7**, 54.
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the liver duodenal alimentation contributes greatly toward diminution of the functional work of the liver.

The drip method of duodenal infusion was first described by McArthur[4] through the use of a drainage opening in the biliary tract. Between feedings in cases of ulcer and persistent vomiting, Einhorn[15] gave water by the drip method through the duodenal tube. Lazarus[17] has given fluids in this manner for nourishment in ulcer cases, cachectic conditions, and in some cases preparatory to stomach operations. He has used the tube a few times after operations on the stomach, but only for the purpose of preventing postanesthetic vomiting. In feeding cases, the injection into the duodenum of even moderate quantities of fluid at times causes distress, and emphasizes the importance of the drip method (Morgan,[18] Jones[19]).

Einhorn and Rosenbloom[20] have demonstrated the efficiency of the duodenal route as regards absorption. They determined that there was a maintenance of the nitrogen equilibrium in patients fed by the tube over long periods of time. Gross and Held[21] state that water and salts are readily absorbed in the duodenum, and that, of the carbohydrates, the monosaccharids are readily absorbed in solutions of 6 to 8 per cent., glucose and galactose being more quickly absorbed than levulose and mannose. (Lactose may cause diarrhea.)

The duodenal tube may be passed before operation, to improve the patient's condition more readily, or during or after operation. The tube is of value as soon as it is in the stomach, since the stomach may first be washed to prevent postanesthetic vomiting; the slow infusion avoids irritation due to swallowing, and it may also be used for gavage, in persistent vomiting. In addition, the passage of the tube through the pylorus may relax it as it does in persistent vomiting due to pylorospasm (Hess[10]).

That the pylorus is patent soon after operations on the intestine I have been able to demonstrate (on animals) by means of bismuth, showing that there may be no measurable delay except in extensive trauma, when there may be a delay of about an hour. Immediately after a gastro-enterostomy, however, when the pylorus was spastic, bismuth passed the union into the jejunum without delay (McWhorter[22]).

Fig. 2.—Drip apparatus in action

The small, soft tube may be passed into the stomach or duodenum at the time of operation (Fig. 1). The introduction into the stomach may be effected by first passing the tube inside of a stomach tube and passing it, then withdrawing the latter. I have been able (in the experimental laboratory) to manipulate the metal tip through the pylorus into the duodenum from outside the stomach wall. In one experiment, using a small soft tube without a metal tip, I made a small incision in the stomach wall and pushed the end of the tube into the duodenum by means of forceps. This could easily be done at the time of a stomach resection, or in a gastro-enterostomy when the tube could be placed in the jejunum. The usual container and drip apparatus are connected to the tube, into which any desired solutions may be placed (Fig. 2). The tube may be disconnected at any time for the purpose of lavage or of aspirating, to determine the absorption. McArthur[4] says that the Murphy drip or Kanavel's continuous hypodermoclysis does not accomplish the same results, since in hypodermoclysis the change in the splanchnic circulation is only secondarily affected, and in colonic instillation the improvement in the portal circulation is not so marked as when the same fluid bathes the jejunal lining.

REPORT OF CASES

CASE 1.—D. E. M., aged 52, on whom a resection of the stomach had been performed, with a posterior gastrojejunostomy for carcinoma, received the rectal drip but had difficulty in retention. The patient vomited small amounts repeatedly for three days following the operation, totaling 450, 650 and 450 c.c. daily. At the beginning of the fourth day I passed a tube by mouth. Following this, the stomach was washed and the drip started. The vomiting stopped immediately. The patient received 2,450 c.c. of sterile 6 per cent. glucose solution the following twenty-four hours. Then, after consultation with Dr. Leonard G. Rowntree, more nourishment was added in the form of 1 ounce of cream and the albumin of one egg, twice a day, and the solution was made up with 0.4 per cent. salt solution and 6 per cent. glucose with 4 gm. of sodium bicarbonate daily. The patient absorbed 1,880 c.c. the next twenty-four hours, as it seemed better to restrict the amount of liquid, and 1,550 c.c. the third. During the drip, we aspirated every two hours but could not obtain more than a few cubic centimeters at any time. At this time the patient's condition seemed so much improved that the tube was withdrawn.

CASE 2.—Mrs. M., with an acute attack of appendicitis, had vomited three or four times daily for a week. The first twenty-four hours after operation she absorbed 1,200 c.c. of fluids through the tube, and voided 500 c.c. of urine; in the second twenty-four hours she received 1,200 c.c., and voided 1,050 c.c., when the drip was discontinued because the condition was good.

In an animal experiment for another purpose, resulting in a general suppurative peritonitis following a perforation of the cecum, I inserted the tube into the duodenum. The dog (weighing 20 pounds) absorbed 1,200 c.c. of physiologic sodium chlorid solution with epinephrin the first seven hours.

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ADVANTAGE OF THE METHOD

Infusion through the permanent tube by mouth is desirable in the treatment of postoperative cases, with early nourishment and medication, since it may be instituted at any time without adding to the dangers of operation. In dehydration, acidosis, ileus and especially in the persistent vomiting following gastro-intestinal operations, this method has proved of definite value.

RECONSTRUCTION OF THE PYLORUS AND PYLORIC ANTRUM

BY TWO SUPERIMPOSED FASCIAL TRANSPLANTS AFTER EXCISION OF PYLORIC ULCER *

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CHICAGO

The surgical treatment of gastric and duodenal ulcer has changed very little in the last thirty years. Early in that era a number of men performed both anterior and posterior gastro-enterostomy, and this has been the popular and usual operation for all forms of gastric and duodenal ulcers. When this operation was first employed, surgeons performed it because they believed it produced drainage from the stomach to such an extent that all the food would go through this opening and none through its normal pyloric opening. Since that time many advances have been made in the knowledge of the physiology of the stomach and also the pathology of this condition through fluoroscopic and Roentgen-ray examinations. In all these studies it has been proved that the stomach with a gastro-enterostomy functionates in an entirely different manner from that for which the original operation was performed. In spite of this fact, little has been done in the line of surgery to change the surgery of the stomach in accordance with the new scientific and physiologic facts which have been demonstrated. The result is that gastro-enterostomy alone seems to be the popular operation today, and the only changes which have been made relate to its location and a few fine technical details as to suture material and type of stitch used. In simple gastro-enterostomy without pylorectomy and closure, the Roentgen ray has shown that at least 25 per cent. of food and secretion passes by the old route, thus invalidating the purpose of the operation.

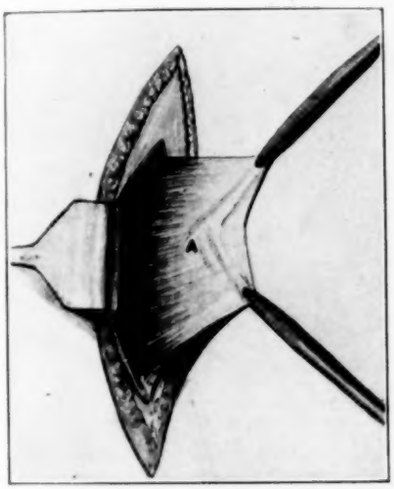

Fig. 1.—Transplant 2: *A*, transplant consisting of peritoneum, and transversalis fascia and muscle.

About seventeen years ago, various surgeons added to this operation the closing off of the ulcer distal to the gastro-enterostomy by what is known as a pyloric closure. The majority of the methods have not proved successful, because they were only temporary closures and for this reason did not give the desired results.

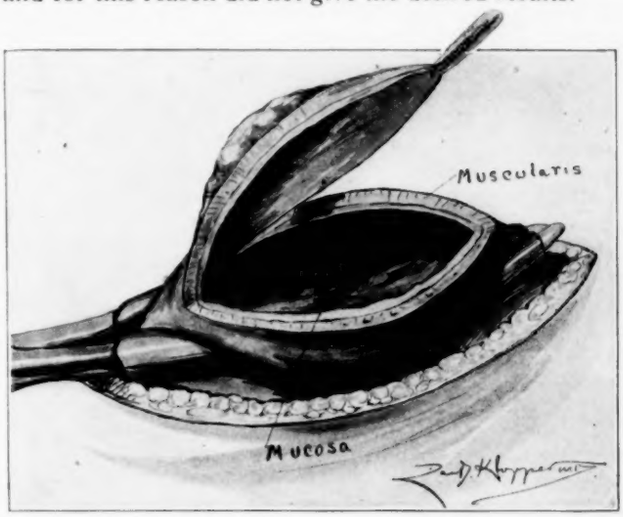

Fig. 2.—First method: application of stomach clamp and excision of ulcer.

In 1914[1] I demonstrated a method of pyloric closure by using a submucous fascial transplant, which has proved experimentally and clinically to be absolutely permanent. I believe the permanent closure is a decided step forward, because it produces in the region of the ulcer all of those conditions which tend to cure an ulcer, namely:

1. By shutting off the gastric secretions and food from the stomach and duodenum, in which these ulcers occur, all irritation is arrested.

2. By using the submucous fascial transplants, a paresis is produced in the pylorus and duodenum from the point of closure around to the gastro-enterostomy, which places the ulcer at absolute rest.

I have been much impressed by the statement of medical men and surgeons that the patients who have their ulcers excised do best and have fewer symptoms following operation, while those who have a gastro-enterostomy, with or without pyloric closure, have a more protracted course of symptoms after operation. The only reason that ulcers in the pyloric region are not excised so frequently as those in the body of the

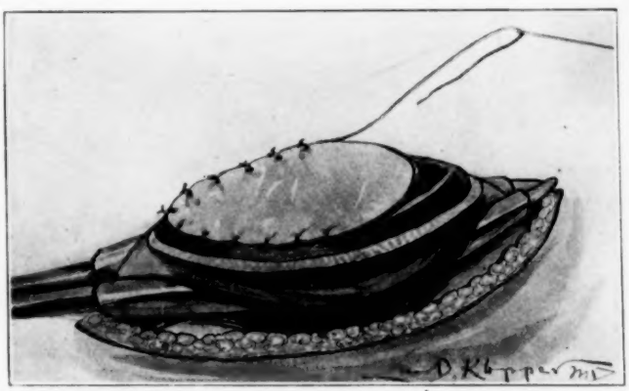

Fig. 3.—First method: suturing Transplant 2 to mucosa.

* From the Morris Institute of Medical Research of the Michael Reese Hospital.

1. Strauss, A. A.: New Methods of Pyloroplasty for Congenital Pyloric Stenosis, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1533.

stomach, especially those on the lesser curvature, is that they are much more difficult to excise, and when excision is attempted, it produces so much mutilation

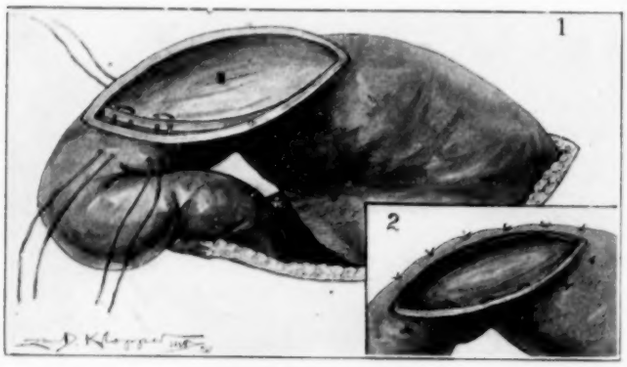

Fig. 4.—First method: Suturing Transplant 1 to muscularis.

that it is necessary to remove the entire pyloric segment. A number of men abroad and in this country, especially Rodman and Deaver, have carried out the principle of always excising the ulcer by doing a pylorectomy and then performing a gastro-enterostomy. The principle of excising the ulcer is correct, but to excise the ulcer and with it take the most important part of the stomach, as they do in the pylorectomy, I believe is wrong.

The ideal object of any surgical procedure should be to do away with the pathologic conditions and leave the organ in as nearly normal an anatomic condition and physiologic relationship as possible. In doing a pylorectomy some men leave only the body of the stomach, whose functions we know to be entirely different from that of the pylorus. The fact, that the patient lives in spite of this, does not prove the operation to be justifiable.

We know that the body and the fundus of the stomach during the process of digestion are in a state of tonic contraction, forcing the food in small portions into the pyloric antrum or vestibule. If that portion is cut off, as it is in pylorectomy or in von Eiselberg's exclusion method, the tonic contractions of the body

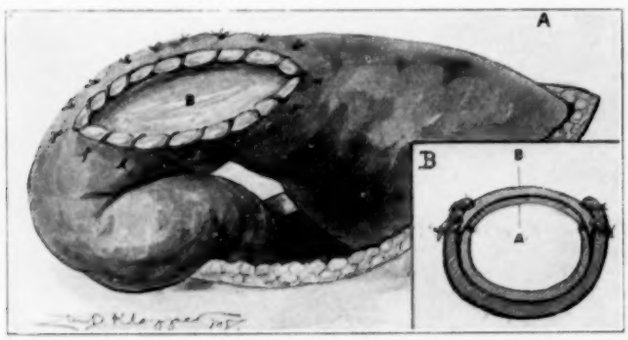

Fig. 5.—First method: *B*, fascial transplant attached to muscularis; *A*, transplant composed of peritoneum, transversalis muscle and fascia attached to mucosa.

and fundus on the gastro-enterostomy placed in that locality cause the stomach to empty within from twenty to thirty minutes. This certainly must be an abnormal condition, for the function of the stomach is to retain the food from six to eight hours and have it undergo certain forms of digestion, being passed into the intestine in small bits and not jammed through an enterostomy opening within twenty or thirty minutes without being properly digested.

Mayo, Kuttner, Hartmann and Payr have practiced excision on ulcers of the lesser curvature and found that the stomach did not empty itself properly, owing to spasm or improper action of the muscle tendon of the lesser curvature, and for this reason in several instances they either had to perform a gastro-enterostomy at a second operation, or remove in the first operation the entire segment in which the ulcer occurred.

It will be noted from the experience of all these surgeons that excision of the ulcer would be the most logical procedure if it did not require too much additional surgery and mutilation of the stomach. This is especially true when we consider the problem of the relationship of ulcer to cancer and the work of Rosenow, who has demonstrated that the ulcers of the stomach are lesions produced by a streptococcus infection similar to lesions in the inflamed gallbladder and inflamed appendix. If this is true, then there can be no valid reason why an ulcer of the stomach should not

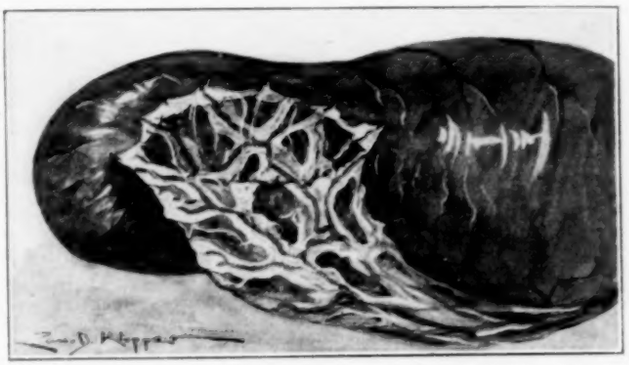

Fig. 6.—First method: free edge of attached omentum covering area of operation.

be treated the same as the chronically inflamed gallbladder or inflamed appendix, namely, by excision.

In 1912, while working on the problem of reconstruction of the ureter from internal portions of the abdominal wall consisting of fascial transplants, I noticed that the interposition of this fascial tube between the cut ends of the ureter interrupted the peristaltic waves. In the same way, one year later, by using a submucous fascial transplant to close off the pylorus, I noticed a paresis of the bowel from the point of closure around to the gastro-enterostomy. I then conceived the idea that by taking advantage of the foregoing fact and excising the ulcers of the lesser curvature and pyloric region, reconstructing that portion by fascial transplants, we would have a normally functionating stomach without pylorospasm. None of the additional surgical procedures, therefore, such as resection of the portion of the stomach in which the ulcer occurred, pylorectomy or gastro-enterostomy, would be necessary. Hence I wish to present the two following procedures:

FIRST METHOD

A right rectus incision was made one-half inch to the right of the midline, extending from the angle of the ribs down to the umbilicus. The anterior sheath of the rectus was exposed and an oval flap about 1 to 1½ inches in length and about 1 to 1½ inches in width secured. In resecting this a thin, adherent layer of

muscle fibers from the rectus muscles was taken with it. The rest of the abdominal wall was then divided and the peritoneum opened. The forceps were placed on the inner portion of the divided abdominal wall and the peritoneum with its transversalis fascia and muscle was pulled upward (Fig. 1) and divided at the dotted line which forms Transplant 2.

The stomach was next brought into view. The pyloric portion in which the ulcer occurs was tightly grasped between the thumb and index finger and an elliptic incision was made around the ulcer through the muscularis down to the mucosa. The mucosa was separated from the muscularis beyond the surrounding infiltrated area of the ulcer. A stomach clamp was then applied and the ulcer with its surrounding infiltrated area was cut away (Fig. 2).

Transplant 2, which is composed of peritoneum transversalis fascia and muscle, was now sutured by an end to end suture with fine chromic catgut to the mucosa, the peritoneum corresponding to the mucosa (Fig. 3). The first transplant, which is composed of the anterior sheath of the rectus and some muscle fibers, was now placed and sutured to the muscularis with interrupted silk sutures similar to the Andrews imbrication method, the sutures being placed through the edges of the transplant in such a manner that the transplant was between the mucosa and the muscularis with the muscularis overlapping it (Fig. 4, 1 and 2).

Fig. 7.—Roentgenogram showing perfect action of pyloric antrum and pylorus fourteen months after operation.

A second suture, which, however, was not absolutely necessary, was placed around the inner edge of this transplant and muscularis (Fig. 5, *A* and *B*). The free edge of the attached omentum was now sutured over this entire area with a few interrupted catgut sutures (Fig. 6). This part of the procedure I believe to be very important for, as I have previously shown, the omentum not only acts as a means of preventing hemorrhage, leakage and adhesions, but it also does something far more important: it vitalizes the fascial transplant. This it will do not only in a clean field but also in an infected field. I know of no other organ or part of an organ in the body, with the exception of the heart muscle, on which a greater amount of work is placed than the pyloric region of the stomach. These fascial transplants not only are subjected to the acid secretions and food particles from the stomach, but also have to withstand the intrapyloric pressure and the tremendous peristaltic contractions which occur at the pyloric end of the stomach during digestion.

Fig. 8.—Cross section of reconstructed pyloric region at end of twelve months.

I believe that these transplants constantly hold without leakage because the blood vessels and lymph of the attached omentum become adherent immediately to these fascial transplants, nourish them, and also produce a collateral circulation in the surrounding area of the infiltrated stomach wall, and I believe that this is the most important function of the attached omentum in this procedure.

Thirty-four animals were operated on in the last three years by this method, of which four died within from six to eight days following the operation. Necropsy revealed a peritonitis which, however, was not due to any leakage from the area of operation. All of the thirty animals that lived made uneventful recoveries and acted, shortly after the operation, like normal animals. They gained in weight and appeared in good health.

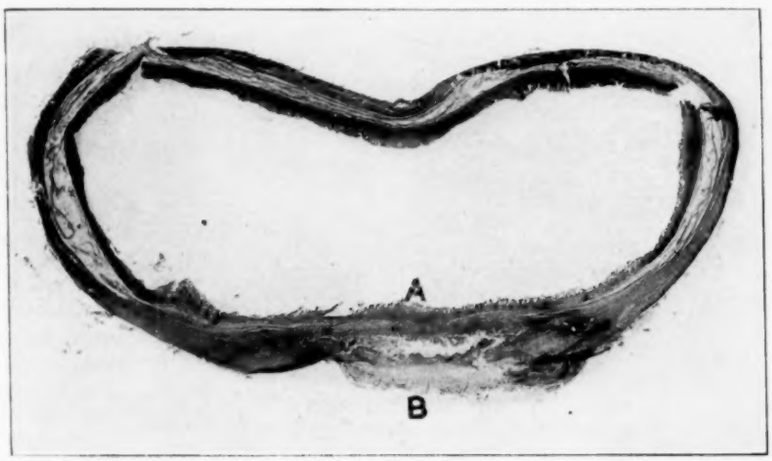

Fig. 9.—Photomicrograph of transverse section of reconstructed pylorus; *A*, mucosa; *B*, transplant. At end of twelve months.

Practically all the animals were subjected to roentgenoscopy from time to time, and to fluoroscopy at various intervals from six weeks to one year. All of them

Fig. 10.—High power photomicrograph taken at junction of transplant and stomach: *A*, omental vessels from great omentum; *B*, transplant; *C*, healed in mucosa. At end of twelve months.

showed a normally functionating pylorus (Fig. 7). The pyloric action and cap were so perfect that several Roentgen experts could not distinguish under the fluoroscope the animals which had been operated on from normal animals.

The first ten animals operated on were killed six months after operation. The second ten were killed nine months after operation, and of the next series of

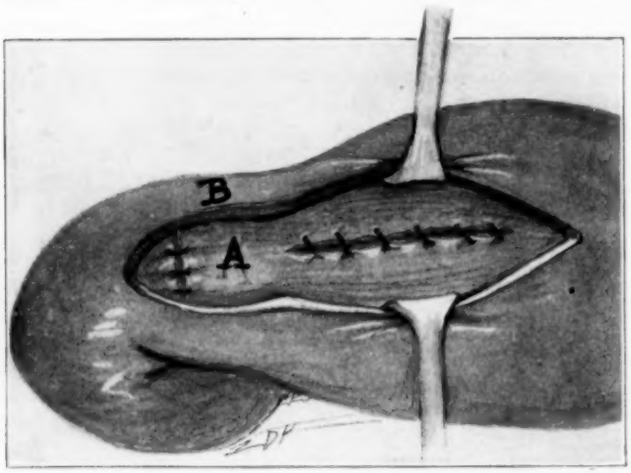

Fig. 11.—Second method: *A*, mucosa; *B*, muscularis; mucosa sutured after excision.

ten, five were killed at the end of eleven months, three at the end of twelve months, and two at the end of fourteen months. All of the animals showed practically the same condition.

When the abdomen was opened, the stomach was found perfectly free; the great omentum covered the area of operation and appeared perfectly organized with the fascial transplants. The stomach was now distended under the hydrant, both from the duodenal and the esophageal end, and shown to be perfectly patent and normal in size.

Cross section (Fig. 8) revealed a perfectly patent pylorus. Microscopically (Fig. 9) a transfer section through the pyloric region revealed that both fascial transplants had healed perfectly, that the omental vessels were attached to the transplant, no scar tissue could be noticed, there were no areas of degeneration present, and the mucosa of the stomach had healed over the peritoneal surface of the inner transplant (Figs. 9 and 10).

SECOND METHOD

Within the last year I have simplified this technic by performing a plastic operation on the mucosa and using only one transplant, thus:

The incision around the ulcer down to the mucosa was made as in the first method, with the exception that the incision was carried back on the body of the stomach for a distance of 2 inches and this mucosa thoroughly freed from the muscularis around one half of the circumference of that portion of the stomach. The ulcer was then cut away as in the former procedure.

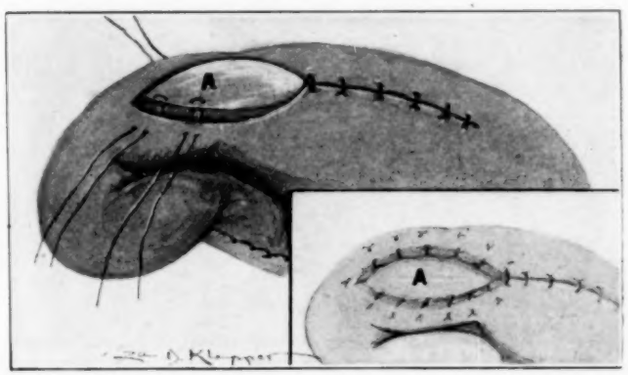

Fig. 12.—Second method: insertion of fascial transplant; *A*, transplant.

A transverse incision was made in the mucosa and sutured longitudinally, which allowed the mucosa to come forward where the ulcer was cut away, so that it could be easily sutured transversely (Fig. 11). The fascial transplant was then set in (Fig. 12), and covered by omentum as in the former procedure (Fig. 13). The same procedure has been carried out on the duodenum with equal success.

COMMENT

Clinically these animals do as well as those operated on by the first method, and the procedure is much more simple than the first one. The second method, however, has not been tried out as thoroughly and for as long a time as the first one.

The problem was as to whether this procedure would be feasible on a stomach which had undergone the pathologic changes produced by an ulcer. In an effort to determine this point, Dr. Walter Hamburger and myself produced some chronic ulcers in the pyloric region according to the method described by Hamburger and Friedman, and within from six to twelve weeks these animals were reopened. We found all the pathologic conditions of large, indurated ulcers with many adhesions to the under surface of the liver and parietal wall.

The operative procedure mentioned above was carried out on these animals, and we found that it was just as easy and just as practicable as on the normal stomach. In making pyloric closures and simple gastro-enterostomies on animals in which we had produced ulcers, we found that the clinical course was much better when the ulcer was excised.

Of interest in connection with the question of vitalization of the fascial transplant by the free edge of the attached great omentum in an infected field are four cases in which operation was performed for perforating gastric ulcer and in which the ulcers were so large and indurated that purse-string sutures and inversion was out of the question.

In the first patient the edge of the ulcer was curetted, and two deep sutures were placed through the indurated area to bring the freshened edges together. A large fascial transplant from the anterior sheath of the rectus was sutured with interrupted silk stitches over the entire field, extending beyond the indurated area of the ulcer. The free edge of the attached omentum was now brought over this entire area and sutured over the transplant.

In the second patient the induration was so marked that the edges of the ulcer could not be brought together by suture, and the fascial transplant was simply sutured over the opening and covered by omentum. The other patients were operated on in the same manner. All four patients made uneventful recoveries and are at present in good health.

These cases illustrate the practicability of using the attached omentum to vitalize free fascial transplants in an infected field as well as in a clean field. The omentum not only vitalizes the fascial transplant but also produces a collateral circulation around the indurated areas and thereby promotes healing of the perforated ulcer.

CONCLUSIONS

1. Three years' experience with this method has proved it to be an absolutely safe procedure.

Fig. 13.—Photomicrograph of transverse section of pylorus where single transplant has been used: *A*, fascial transplant; *B*, fascial transplant united to muscularis; *C*, mucosa. At end of ten months.

2. In view of the relationship of ulcer to cancer, and the fact that it probably is a localized lesion produced by streptococcus infection, this method of excision seems far more rational than gastro-enterostomy with or without pyloric closure.

3. The operation leaves the stomach in its normal anatomic condition and physiologic relationship, and does not mutilate the organ or cut away any of its most important parts.

4. The operation takes far less surgical skill, produces much less shock, and takes less time than a simple gastro-enterostomy.

5. The vitalization of the free fascial transplants by the free edge of the great omentum, in both a clean and an infected field, has been proved both experimentally and clinically.

6. The closing over of a perforated ulcer by a free fascial transplant and the attached omentum is far safer and more permanent than a purse-string suture placed in the indurated area of an ulcer.[1]

30 North Michigan Avenue.

USEFULNESS OF SERUMS AND VACCINES UNDER WAR CONDITIONS

G. W. McCOY, M.D.
Director, Hygienic Laboratory
WASHINGTON, D. C.

The development of biologic products used for prophylactic and therapeutic purposes has been so extensive that confusion exists as to the value of some of the agents of this group, and a brief discussion of the subject at this time is warranted.

The brilliant results which followed the use of the first agents of this group, notably vaccine virus, antidiphtheric serum and antitetanic serum, have not been duplicated by the majority of those that have come into use in recent years.

In this country products of this class may not be imported, exported, or sold in interstate commerce without a license issued to the manufacturer by the secretary of the treasury, which license is based on a careful investigation of methods of the manufacture of the products and conditions surrounding it.

The license means in effect that products are produced under conditions which should insure freedom from dangerous contamination and, in cases in which a potency standard has been established, that the product is of the potency claimed. Such standards have been adopted for the antitoxins for diphtheria and tetanus; a tentative standard has also been established for antityphoid vaccine.

Products for which there are no potency standards range all the way from such trustworthy agents as vaccine virus and antirabic virus to those of such doubtful value as many of the bacterial vaccines and the large family of tuberculins.

Aside from licensed manufacturers, certain municipal and state health laboratories produce biologic products. These laboratories are supervised only by their own departments; this supervision may be effective or otherwise, depending on circumstances.

Before consideration of the individual agents that will be discussed, it may be pertinent to state that

1. This paper is the third report of investigations made in this laboratory on this subject. The preliminary report, "New Methods of Pyloroplasty," appeared in THE JOURNAL, Oct. 30, 1915, p. 1533. Reference should also be made to "Reconstruction of the Pylorus," Surg., Gynec. and Obst., Jan. 7, 1916, p. 496.

the available supply of biologic products, actual and potential, is fully equal to any conceivable requirements. Indeed, during the war, American manufacturers have furnished to foreign governments large quantities of tetanus antitoxin, the product most extensively used in active military operations. If our supplies of munitions of other sorts were relatively as abundant, our condition of preparedness would be all that could be desired.

It seems scarcely necessary to point out that by far the largest field of usefulness for these agents is in the prophylaxis of infectious diseases, although there is an important field of usefulness for some in a curative way. Some are useful for diagnostic purposes exclusively; these will not be considered here.

AGENTS OF PROVED WORTH

VIRUS

Smallpox Vaccine.—The only points that need be mentioned here are the form of supplying the agent and the method of applying it. Vaccine virus is supplied (1) on points of celluloid, ivory, glass, or bone; (2) in glass capillary tubes for individual vaccination; and (3) in bulk for multiple vaccination. All of these forms have their advocates. The first is perhaps most generally used, the second the most generally recommended, and the third the most economical when large numbers are to be vaccinated at one time. If the virus is potent, the manner of supplying it is of no consequence.

As to the method of vaccination, linear incision is probably the most satisfactory.

The vital thing in connection with the keeping of vaccine virus is a low temperature; the lower the better. At room temperature the virus is liable soon to lose its potency. If the virus is kept sufficiently cold, the date of expiration given by the manufacturer may be regarded as dependable.

Sterile vaccine prepared by Noguchi's method has not been used extensively enough to justify an opinion as to its value under varied conditions. It seems not to be generally known that much of the regular vaccine virus on the market contains few bacteria. Some packages, indeed, are sterile by the ordinary tests.

As vaccine virus leaves the manufacturer it is generally of a satisfactory quality; but much of that obtained in the usual channels of trade is nearly or quite inert, on account of improper handling and storage.

ANTITOXIC SERUMS

Antidiphtheric Serum.—This product comes into consideration both as a prophylactic and as a curative agent; its value and mode of use are so well known that it need not be mentioned further here.

Antitetanic Serum.—The use of this agent in armies is at present extensive. It is understood that single orders for as many as 500,000 doses have been placed in America by European governments, and enormous quantities are being made in Europe. It has become the rule to give every wounded soldier a prophylactic dose of tetanus antitoxin as soon as possible after the wound is inflicted. During the early part of the war, the dose used was 1,500 American units; but, at least in the English service, this has been reduced to 500 units repeated every seven days "until the wound has healed or become healthy." It was found necessary to repeat the dose on account of the late development of tetanus in cases in which only a single dose was administered.

Dried antitetanic serum as an application to wounds has been recommended, but seems not to have found favor; certainly it has not replaced the subcutaneous use of the fluid serum.

As a curative agent, in the presence of clinical tetanus, 3,000 units of the serum should be administered intraspinally, at the appearance of the first symptoms; 10,000 units in addition should be given intravenously. The intraspinal dose should be repeated daily until improvement sets in, and the blood should be kept antitoxic by further subcutaneous doses of 10,000 units.

The war experience has confirmed what had been learned in civil practice, that as a curative agent the serum is not of great value, at least not unless used early, intraspinally, and in large doses.

ANTIBACTERIAL SERUM

Antimeningococcus Serum.—Some of the earlier reports on the use of this agent during the present war indicated that it had not proved satisfactory; at present, however, it is being used with success. The variability in the strains of meningococci encountered in various cases and in various outbreaks doubtless accounts in part for the failure to secure more uniform results. The lack of a definite potency standard makes it impossible to judge accurately of the value of any given specimen of serum. This is particularly unfortunate, as epidemic meningitis is especially liable to occur in camps in which large numbers of young men are brought together. The serum should be given early and persistently.

BACTERIAL VACCINES

Antityphoid Vaccine.—There seems to be no question about the great value of this agent. In military service it has been highly successful. It appears that, at least for military purposes, it is desirable to use a vaccine containing, in addition to *B. typhosus*, the paratyphoid organisms A and B. In the early part of the war, in some of the armies, the latter organisms were not used; and, in consequence, much paratyphoid occurred.

The administration of antityphoid vaccine varies in different hands. The procedure followed in America is to give 500,000,000 organisms; followed by double that dose in a week or ten days, and a third dose of the same size as the second after a further interval of a week or ten days. This product should be used reasonably fresh, though little is known of the rate of deterioration with age.

The question of the duration of the immunity is an important one. It has been customary in this country to regard the immunity as lasting about four years; but the experience of some of the European armies indicates that this period is too long. It is understood that revaccination is being practiced annually, and under some circumstances even after six or seven months.

AGENTS NOT WELL ESTABLISHED BUT WORTHY OF TRIAL

SERUMS

Antidysentery Serum.—It is well known that dysentery organisms of the Shiga-Kruse type produce toxins, and that it is possible to produce a serum which neutralizes these poisons. The evidence at hand indicates that such a serum should be tried in any case of bacillary dysentery due to organisms of

the Shiga-Kruse type. As high as 80 c.c. have been given at a dose.

If dysentery should prevail to any considerable extent, it probably would be worth while to have serum prepared for the type or types of infection existing in the area in which the serum is to be used.

Antipneumococcus Serum. — The work done in recent years on the separation of pneumococci into groups, and the results of a specific treatment, indicate that antipneumococcus serum, potent against organisms of Group 1, may be expected to be of value in infections due to this type. On account of the difficulty and delay that may be incurred in arriving at a type diagnosis, not to mention the impossibility of this under many circumstances, some students of the subject recommend the use of a Group 1 serum in any case of pneumonia, recognizing, of course, that it will be of no value in many cases, but believing that the benefits of its early use in Group 1 infections justify this somewhat unscientific procedure. It seems clear that no serum other than that against Group 1 organisms is of value.

BACTERIAL VACCINES

Vaccines against bacillary dysentery have been employed in a prophylactic way, but the evidence as to their value is not established; at least such evidence has not been published. It appears to be difficult to prepare a vaccine which does not produce unduly severe reactions and yet gives promise of being effective. Dosage is one half, or less, that of antityphoid vaccine.

Anticholera vaccine is reported to have given satisfactory protection, and the data at hand warrant its use as a prophylactic. The doses are 500,000,000, and 1 billion organisms, with an interval of one week.

Meningococcus vaccine has been used, but with inconclusive results. A vaccine, prepared from the organisms occurring in the epidemic prevailing, would in all probability prove more useful than one made from stock strains. The dosage is about the same as for antityphoid vaccine.

Combined vaccines, consisting of the typhoid bacillus, the two paratyphoid, the dysentery bacillus and sometimes the cholera vibrio, have been used to some extent. There appears to be justification for the use of such combinations as preventives under special conditions.

Prophylactic and therapeutic vaccinations against wound infections have been carried on, but the results do not appear to be encouraging.

ANAPHYLAXIS

The danger of anaphylactic shock, ensuing when it becomes necessary to administer horse serum to a person who has been inoculated with horse serum at an earlier date, must be mentioned. The consensus of opinion is, however, that this consideration should not interfere with the use of any prophylactic or curative serum which may be required. It has been recommended that, when hypersensitiveness is suspected, a small dose (0.1 c.c.) of serum should be given half an hour prior to the full dose, the object being to desensitize the susceptible individual. Increasing doses should be given at half-hour intervals.

Clinical Notes, Suggestions, and New Instruments

A LIGATURE KNOT TIER

HENRY R. BOETTCHER, M.D., CHICAGO

This instrument facilitates the tying of ligatures at points which the fingers cannot easily reach.

An assistant holds the handle of the forceps in the usual way for removal. The operator takes a ligature, ties a simple overhand knot around the handle of the forceps and brings the ends of the ligature down astride the handle, holding them between the first three fingers of the left hand. Then the tier is hooked on the end of the ligature nearest the right hand, from the under side, and given two turns to the right, which will put the ligature within the spiral or head of the

A ligature knot tier.

instrument. The spiral is now pushed up to the knot, and the end of the ligature is held against the handle of the tier by the thumb or first finger, the other end being held by the left hand.

The knot is now pushed down the handle and over the tip of the forceps. The left end of the ligature shou'd be kept well under the handle of the forceps, which helps to keep the knot over the tip, when the tying force is applied. This is now done, the forceps are removed, and a second knot is tied and pushed down.

In tonsil work, forceps with a tapering handle are the easiest to tie over, and plain sterilized catgut Nos. 1 and 0 are the best strengths to use.

It is well not to cut the ligature too close to the knot.

6336 Harvard Avenue.

PELLAGRA WITH ERYTHEMA OF SCROTUM AS INITIAL SKIN MANIFESTATION

C. E. CROSBY, M.D., GREAT FALLS, S. C.

D. R. T., man, aged 31, mill hand, married, first came under my care early in June, 1916, with symptoms of nephritis which readily improved under treatment. June 15, I was called to see him and found him suffering with acute appendicitis, for which he was immediately removed to a hospital and operated on.

August 15, he came to my office complaining of burning and itching of the scrotum. Examination revealed an intense reddening and slight thickening over an area about an inch in diameter on each side of the lower portion of the front of the scrotum. It was separated by a longitudinal strip of normal skin along the median raphe, and the erythematous area on the right side was somewhat larger and more intensified than that on the left. The junction of the reddened area with the normal adjacent skin formed a distinct line of demarcation, the two areas being essentially bilateral as regards the median raphe with no communication at any point. These areas later underwent the changes characteristic of pellagrous skin lesions, ending with complete desquamation.

In about two weeks the mouth became sore and red. This condition later developed into a typical pellagrous stomatitis which was followed, about five days later, by a severe diarrhea necessitating constant access to stool.

About September 15 a mild erythema was noticed on the knuckles of both hands which, a few days later, extended to cover the backs of both hands and lower portion of the dorsums of both wrists. These areas were sharply outlined by definite lines of demarcation and later terminated in the usual desquamation.

The patient stated that since returning from the hospital he had lived almost exclusively on bread and molasses. He

was instructed to leave off the bread and molasses and eat fresh meats, fresh milk, eggs and legumes, which he secured with some difficulty, as he had not been able to work since June. September 30, he had practically recovered from his attack of pellagra, and was able to return to work. Since that time he has passed an examination for life insurance.

TREATMENT OF SKIN EROSIONS WITH PARAFFIN *

ELWOOD B. HAWORTH, M.D., PITTSBURGH
Fellow of the American College of Surgeons; Surgeon to Western Pennsylvania Hospital

In the treatment of severe burns, or of acid corrosions, or of wounds that fail to epitheliate, it is advisable to use the paraffin treatment. We have had eminent success with this method of therapy, and we shall describe here how the wax is made and how it is applied.

PREPARATION OF WEST PENN WAX

The ingredients are mixed in these proportions:

Paraffin (Gulf Refining Co., Pittsburgh)	70.0 gm.
Liquid petrolatum, U. S. P.	3.0 c.c.
White beeswax	10.0 gm.
Rosin	7.0 gm.
Resorcin	0.2 gm.
Sudan III	0.05gm.
Alcohol (95 per cent.)	10.0 c.c.

The paraffin and the oil are melted in a casserole over asbestos board, the direct fire being used. The resorcin is dissolved in the alcohol, and added drop by drop to the molten paraffin with constant stirring. The mixture is now heated until all the alcohol is evaporated. The beeswax is stirred in until melted, heat being used if necessary. Then the rosin is added and mixed in thoroughly while the casserole is being heated. The mixture can be poured into molds and cooled.

It is possible to incorporate a number of ingredients in the West Penn wax, as salicylic acid, gum benzoin, etc., which may be useful in the treatment of skin affections. These substances are incorporated by dissolving them in alcohol and thoroughly admixing them in the melted paraffin, until all the alcohol has evaporated.

TREATMENT OF BURNS BY MEANS OF WEST PENN WAX

When a severe burn of recent occurrence presents itself, we puncture all the blebs and remove all the dead skin. The melted wax is now applied directly over the burn by means of a camel's hair brush. A piece of gauze or a thin piece of cotton is placed over this application, and this is again painted with wax so that the gauze or cotton is firmly embedded in the wax. The whole surface is now bandaged with loose cotton. By permitting a piece of the cotton or gauze to project between the two layers of wax, it is quite feasible to remove the wax by one gentle pull. When the wounds are very painful and it is not practical to paint the wound with a brush, the wax is applied to the surface by running a strip of gauze through the melted wax and applying directly.

If the wound is wet it is necessary to dry it with hot air; otherwise the wax will not stick to the surface. This can be done by means of an electric hot air generator, commonly used by barbers.

In old wounds or burns that are septic, it is essential first to render the surface clean by means of Dakin's neutral solution of chlorinated soda, and then treat it with the wax as if it were a freshly burned surface.

The West Penn wax is very flexible. On cooling it contracts and exerts a suction action, thus inducing an active hyperemia and keeping the wound air tight. The resorcin is added as a mild antiseptic and as a preventive of foul odors that might otherwise be formed. Sudan III is used as a stimulant of epithelialization. Scarlet red may be used instead.

* From the Biochemical Laboratory, Western Pennsylvania Hospital.

To Know.—When you know a thing, to hold that you know it; and when you do not know a thing, to allow that you do not know it; this is knowledge.—Confucius.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 1321)

TREATMENT OF UREMIA

The indications for the treatment of uremia may thus be itemized: (1) the diet; (2) elimination; (3) rest; (4) pain; (5) care of the circulation; (6) care of the central nervous system; (7) control of edema.

1. At the first evidence of uremia, the diet should be diminished to the smallest amount possible, such as a pint of milk a day. The use of water should not necessarily be restricted, unless edema is extensive and edema of the lungs is feared; if this is the case, it is well to restrict the intake of water in the endeavor to have the exuded liquid resorbed into the blood vessels and excreted in some way, if not by the kidneys, by the skin or bowels, as a certain amount of purging must be caused, and as perspiration, if not too profuse, is desirable. If, on the other hand, edema is not extensive, and catharsis and perspiration are caused, a liberal amount of water should be given the patient in order to facilitate these processes. It should be emphasized, however, that profuse catharsis causing circulatory weakness, or profuse perspiration causing exhaustion do not cure patients with uremia; furthermore, if water is not supplied and well absorbed into the blood vessels, the excretion of water from the blood vessels by the bowels or skin, or both, causes a concentration of the toxins which cause uremia. Hence, the nervous system must be more seriously irritated.

It may be well to note here, however, that Haldane and Priestley[116] have recently found that when large amounts of water are given to a normal person, and the output of urine is increased and the specific gravity lowered, the blood concentration remains the same. This was also true when profuse perspiration was caused. They came to the conclusion that a diminished hemoglobin percentage or an increased volume of blood was not caused by the intake of such amounts of water as would cause diuresis. This does not prove that in abnormal conditions, such as uremia, the blood may not become more concentrated by profuse diarrhea and sweating, or become less concentrated by the ingestion of sufficient amounts of water.

The scanty diet of a pint of milk or a quart of barley water a day, suggested above, cannot be continued more than a few days without the patient becoming seriously weak. If he is not comatose, the diet should be increased by some thin liquid cereal, with more or less alkali, such as sodium bicarbonate. The object of the alkali and the carbohydrate is to prevent the added element of acidosis. The alkali, however, should not be given in large quantities if there is serious edema, as it may aggravate this condition.

If convulsions seem imminent, the only food the patient requires is water, barley water, oatmeal gruel, malted milk, orange juice or lemonade, according to the condition of his central nervous system and stomach. If he is vomiting, and emptying his stomach well, hot water is the required treatment. If he is nauseated, but does not vomit, the stomach tube may be used to

116. Haldane, J. S., and Priestley, J. G.: Jour. Physiol., 1916, 50, 296, 304.

wash out the stomach, which will relieve him greatly. Occasionally bismuth and soda will soothe the stomach; a mustard paste over the epigrastrium may stop the nausea by counterirritation; or an electric pad may be of advantage. If more than a day or two is passed during which he is unable to retain nourishment, colon injections of water containing sodium bicarbonate should be given, as starvation may soon cause an acidosis which will add to the intoxication.

2. Bowel movement should be induced by compound jalap powder, 2 gm. (30 grains), repeated in four hours if free movements are not caused. Calomel or any other mercury may be injurious when a patient is uremic. If he is comatose and free bowel movements are urgently needed, 2 or 3 drops of croton oil on granulated sugar may be placed on the tongue, or may be given diluted, if the patient is able to swallow. If the bowels have moved freely several times, the patient should not be given another cathartic for twenty-four or thirty-six hours; but when the bowels have not moved for twelve hours or more, washing out of the colon with warm water is efficacious.

Profuse dripping perspirations are not essential in uremia. Great benefit apparently has been derived when hot air directed under the bed-clothing, actual body baking, steam bath (or some other procedure), has caused profuse perspiration. When patients survive such treatment, it is because enough dilatation of the blood vessels of the surface of the body has occurred to relieve the kidney congestion. But if the kidneys cannot so react, the blood is depleted of water, the retained toxins are in more concentrated form, the kidneys may not improve, and the danger is increased. Too profuse perspiration and general surface relaxation may also lower the blood pressure below the point desired, and the patient may die of circulatory failure. Hot packs to the back over the kidney region will cause enough local heat to be of more or less benefit to the kidneys by relieving local congestion, at the same time causing enough general perspiration to accomplish a relaxation of the skin without the use of more strenuous measures.

Pilocarpin is not usually indicated. It produces not only profuse perspiration, but also profuse bronchial secretion, so that the patient almost drowns in his own bronchial fluids. Frequently this flow of perspiration and bronchorrhea must be checked by atropin, if it is not too late. Drugs which act as strenuously as pilocarpin are not advisable.

3. Rest of mind and body is essential in uremia. The greater the muscle movements, the greater the nitrogenous waste; the more restless the brain, the more restless the body. When muscle cramps occur and convulsions seem imminent, a quieting dose of chloral, sufficiently large to be effective, should be administered, unless the patient is afflicted with cardiac weakness and low blood pressure. If the patient's heart is weak, if he cannot sleep and is very restless, codein should be given instead of chloral.

4. Some patients who are uremic suffer acute pain, either cardiac or abdominal; this acute pain must be stopped by codein or morphin, even though the impending coma may be hastened thereby. It is imperative that agonizing pain be terminated, even in uremia. Fortunately, not many patients who are uremic suffer such pain; they are more likely to be stupid.

5. The blood pressure is generally high, and large doses of nitroglycerin are advisable; or the chloral resorted to for sleep, or the bromid used to soothe general restlessness will reduce the blood pressure. Catharsis and sweating also tend to lower the blood pressure. However, one must be cautious lest the suddenly lowered blood pressure be coincident with heart failure. If the heart is failing, the diastolic pressure becomes high, the systolic pressure is lowered, and the pulse pressure is shortened. This frequently occurs in the uremic condition of cardiovascular-renal disease, but whether or not uremia is present in that disease, digitalis, or perhaps an intravenous dose of strophanthin, should be given. However, it should be remembered that strophanthin may have too great an effect on the heart, if digitalis has previously been given.

If the blood pressure is very high, and apoplexy or sudden dilatation of the heart threatens, venesection should be done. This is also perhaps the most valuable treatment for convulsions or coma. The amount of blood withdrawn depends on the individual case. Subsequent to the venesection a colon injection should be given, the water containing a small amount of sodium bicarbonate, which should be allowed to be absorbed. If there is no edema or a very small amount, as in chronic interstitial nephritis, physiologic sodium chlorid solution may be introduced into the colon, the object being to fill the blood vessels again and to dilute the toxins they contain, thus reducing the irritation of the brain. Whether or not venesection has been done in uremia, colon irrigation is often of great value, with the water at a temperature of 110 F. A rectal tube may be passed a short distance, and, with the hips elevated, the water allowed to flow into the colon, where it may be allowed to remain a short time, and then siphoned out. This procedure should be repeated every three hours until several treatments have been given, as such irrigation tends to relieve the acute kidney congestion.

6. With frequent convulsions, chloral or bromids may be given by the mouth, or, if they cannot be swallowed, by the rectum; but the latter method of administration is not very satisfactory. Venesection, fomentations over the kidneys, heat, and croton oil catharsis are preferable. If frequent convulsions seem to threaten the life of the patient, chloroform inhalations should be given. Coma may be due to the intoxication, to cerebral pressure from an exudate into the ventricles, or from actual edema of the cerebral tissues. Spinal puncture will often drain fluid from the ventricles, but it would not be of benefit in edema of the cerebral tissues. Hot water bags to the feet and legs and heat over the abdomen will draw the blood from the head, and will lessen the cerebral congestion. Even with convulsions and coma, unless it is the terminal stage of a chronic nephritis, the patient may recover.

There is no detoxicant in uremic poisoning more successful than large doses of thyroid, and if 10 or 15 grains of this substance can be absorbed from the stomach there is generally an improvement, although it may be temporary. When convulsions seem imminent, and when uremic symptoms appear, thyroid should be given in 5-grain doses, or, with the stronger preparations now offered, in 2-grain doses, two or three times daily.

7. If the edema is cardiac, the treatment is that of cardiovascular-renal disease, and if the patient is uremic, digitalis or strophanthin may be of great value. The blood pressure may not be high in a serious gen-

eral anasarca, and caffein may be of value. Exhausting purging of the bowels should not be caused, as heart failure may result.

It may be necessary to remove large exudates from the pleural cavities or from the peritoneal cavity, but when such complications occur with uremic symptoms, the prognosis is almost hopeless. With such general anasarca, theocin may be tried; but it has been proved that this does not increase the output of nitrogen, although it may increase the output of sodium chlorid and water.

If the patient survives the uremic condition, and the kidneys begin to excrete, the treatment is that outlined for the convalescence of acute nephritis.

DECAPSULATION.

Decapsulation was first suggested by Edebohls, in 1901, and was done by him and by others with the hope that a new blood supply could be created around the kidney structure. Also, if the kidney was so acutely congested and swollen that the capsule formed a constriction, the release of this constriction might improve and save the kidney, or both kidneys, and, temporarily at least, prevent uremia and save life. This operation has not proved very successful, and certainly should not be done in chronic nephritis. However, decapsulation may be considered (1) in acute eclampsia when emptying of the uterus does not stop the convulsions; (2) in toxic nephritis (mercury, arsenic and phenol poisoning); and (3) in acute nephritis following an acute infection when uremia is present and there is complete anuria.

PUERPERAL ECLAMPSIA

If possible, this condition should be forestalled. Albuminuria, casts, and symptoms of kidney disturbance during pregnancy should, ordinarily, call for a termination of the pregnancy. Too great conservatism is not justifiable. The longer the kidneys are congested from the abdominal pressure, especially if nephritis has previously occurred, the greater is the hazard to the mother if an attempt is made to save the child, therefore such an attempt should not be made. If the kidney inflammation is not discovered until a short time before term, consultation may decide that it is best not to hasten the birth of the child. On the other hand, every day increases the danger, as the muscular efforts of the mother at the time of parturition load the blood with nitrogenous toxins, especially creatin, and eclampsia is almost inevitable.

If kidney defects are not discovered until parturition has begun, eclampsia may develop rapidly. In this case chloroform must be administered and the evacuation of the uterus hastened. Considerable hemorrhage from the uterus is conservative and life-saving, as the loss of a large amount of blood loaded with toxins may save the patient, after the manner of a venesection; such loss of blood is apparently even more effective in nephritis than that caused by venesection.

Of course it is recognized that puerperal eclampsia may occur when the urine has shown no signs whatever of nephritis. Thyroid in large doses is especially effective in this condition, and should always be given in puerperal eclampsia. After the uterus is evacuated, the subsequent treatment is that of uremia.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

PARRESINE.—A mixture composed of paraffin (melting point 48 to 49 C.), 94 to 96 per cent.; gum elemi, 0.20 to 0.25 per cent.; Japan wax 0.40 to 0.50 per cent.; asphalt, 0.20 to 0.25 per cent., and eucalyptol, 2 per cent. To this mixture is added 0.5 to 1.0 per cent. solution of alkannin in eucalyptol and a minute quantity of gentian violet, these being employed to bring the product to a standard color.

Actions and Uses.—Parresine acts mechanically, essentially like simple paraffin. When applied to burns and denuded surfaces, it excludes the air to a certain extent and relieves pain, provides a soft, pliable splint-like covering to the wounded surface, keeps the parts at a relatively uniform temperature, immobilizes the epidermal tissue, and may aid the formation of new tissue by acting as a scaffolding for newly formed cells.

Parresine is mainly used in the treatment of burns. It is also said to be useful in the treatment of "frostbite," "chilblains," and for covering denuded surfaces.

Dosage.—For use, parresine is melted and applied while liquid by means of an atomizer or brush in a thin layer over the surface of the wound, which has previously been dried by a current of hot air. A thin layer of cotton is then applied and then another layer of melted parresine. This is usually covered with cotton and bandage.

Prepared by the Abbott Laboratories, Chicago. No U. S. patent. U. S. trademark applied for.

Parresine has the properties of paraffin, slightly modified by the addition of gum elimi, Japan wax and asphalt.

It is of a grayish smoky color, has the odor of eucalyptol, and melts at 47 to 48 C. (117 to 119 F.).

SIOMINE.—Hexamethylenamine tetraiodide $(CH_2)_6N_4I_4$. It contains 78.5 per cent. iodine.

Actions and Uses.—Siomine is decomposed in the intestine with formation of hexamethylenamine and iodide, the rate of absorption and excretion being essentially the same as that of inorganic iodides. It therefore produces the effects of ordinary iodides, from which it differs only in that it can be administered in solid form. The administration of siomine provokes the luetin reaction.

No therapeutic claims are made for the hexamethylenamine component of siomine, this being present only to render the substance insoluble.

While ordinarily the hexamethylenamine content of siomine may be ignored, the drug should be discontinued if any signs of hexamethylenamine intolerance should arise, such as vesical irritation or hematuria.

Dosage.—The same as that of potassium iodide; but siomine is administered in solid form.

Manufactured by the Howard-Holt Company, Cedar Rapids, Iowa. U. S. patent applied for. Canadian Patent No. 166652. U. S. trademark No. 107998.

Siomine Capsules, ¼ grain.—Each capsule contains siomine ¼ grain and milk sugar 4¾ grains.

Siomine Capsules, ½ grain.—Each capsule contains siomine ½ grain and milk sugar 4½ grains.

Siomine Capsules, 1 grain.—Each capsule contains siomine 1 grain and milk sugar 4 grains.

Siomine Capsules, 2 grains.—Each capsule contains siomine 2 grains and milk sugar 3 grains.

Siomine Capsules, 5 grains.—Each capsule contains siomine 5 grains and milk sugar 2 grains.

Hexamethylenamine tetraiodide was described by Herton in 1888, and a process essentially the same as that used for the preparation of siomine is described by Sugiura and Falk (*Biochem. Bull.*, 1916, v, 18). Under the name siomine it was first proposed for therapeutic use.

Siomine is prepared by precipitating hexamethylenamine with iodin-potassium iodid solution, and purifying the precipitate.

Siomine is a red powder, having a slight but characteristic odor and taste. When heated to 138 C., it decomposes with violence.

Siomine is slightly soluble in acetone, alcohol, chloroform, carbon disulphide and ether (with partial decomposition). It is almost insoluble in water, but dissolves with decomposition in aqueous solutions of alkali iodides, of sodium thiosulphate and in diluted hydrochloric acid.

If 5 Gm. siomine is heated with 15 Cc. diluted sulphuric acid, first vapors of iodine (recognized by their color and effect on starch paper)

are evolved, later formaldehyde is given off (recognized by its odor and the blackening of paper moistened with silver ammonium nitrate test solution). If the siomine-sulphuric acid mixture is heated until colorless and then supersaturated with potassium hydroxide solution, ammonia is evolved (recognized by its odor and effect on red litmus paper).

If a drop of strong sulphuric acid is added to 0.5 Gm. siomine, decomposition occurs with evolution of brown fumes.

If siomine is incinarated, not more than 0.03 per cent. of ash remains.

If 0.5 Gm. siomine is warmed with 0.5 Cc. hydrochloric acid and 5 Cc. water until a clear solution results, a few drops of barium chloride test solution should not produce a precipitate (*sulphates*).

MERCURIC SALICYLATE (See N. N. R., 1917, p. 190-1).

Sterile Ampules of Mercury Salicylate, 1½ grains.—1 Cc. of suspension contains 0.09 Gm. (1½ grains) of mercuric salicylate. Each ampule contains more than 1 Cc. of suspension.

Sterile Ampules of Mercury Salicylate, 2 grains.—1 Cc. of suspension contains 0.12 Gm. (2 grains) of mercuric salicylate. Each ampule contains more than 1 Cc. of suspension.

Prepared by Hynson, Westcott & Dunning, Baltimore, Md.

ARSENPHENOL-AMINE HYDROCHLORIDE.—Arsenphenol-Aminae Hydrochloridum. — $HCl.NH_2.OH.C_6H_3.As$: As. $C_6H_3.OH.NH_2HCl+2H_2O$.—The hydrochloride of 3-diamino-4-dihydroxy-1-arsenobenzene, corresponding to 31.57 per cent. arsenic (As).

Actions, Uses, Dosage, Physical and Chemical Properties. —The same as those of salvarsan (see New and Nonofficial Remedies, 1917, p. 45).

Diarsenol.—A proprietary brand of arsenphenol-amine hydrochloride.

Manufactured by the Synthetic Drug Co., Toronto, Canada. Canadian patent No. 133,636. U. S. trademark Nos. 90,128 and 90,129.

Diarsenol, 0.1 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.1 Gm.

Diarsenol, 0.2 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.2 Gm.

Diarsenol, 0.3 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.3 Gm.

Diarsenol, 0.4 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.4 Gm.

Diarsenol, 0.5 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.5 Gm.

Diarsenol, 0.6 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 0.6 Gm.

Diarsenol, 1.0 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 1.0 Gm.

Diarsenol, 2.0 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 2.0 Gm.

Diarsenol, 3.0 Gm. Ampoules.—Each hermetically sealed ampule contains diarsenol 3.0 Gm.

Diarsenol is accepted for New and Nonofficial Remedies as the available supply of salvarsan appears to be insufficient to meet the demand, and this preparation conforms to the rules of the Council for acceptance of proprietary preparations. Diarsenol is made in Canada under a license issued by the Commissioner of Patents of Canada. The Farbwerke-Hoechst Company, however, announces that the sale of brands of arsenphenol-amine hydrochloride other than that sold as salvarsan is, in its opinion, an infringement on its rights. The company states that all violations of these rights will be prosecuted under the law.

Medicine During the Colonial Period.—During the colonial period, the status of medicine on this continent was of the most provincial character, its practitioners being sometimes ministers of the gospel, oftener men who had got their training with physicians under indentures of apprenticeship with no medical degree whatever, self-trained midwives for obstetric cases, back-woods sawbones who had acquired their knowledge of surgery in the most rough and ready fashion, and a few settlers who had acquired a legitimate education in Europe, with the still more favored few whose parents were able to give their sons a proper medical education at some European university. The title "doctor" was not even employed in the colonies before 1769. Medical legislation in the several states was mainly centered on the regulation of physicians' fees, and with the exception of the Acts of Massachusetts in 1649 and 1699, and of New York in 1665, little of it was restrictive, in the sense of excluding the incompetent, or of application to the prevention of infectious diseases.—Lieut.-Col. C. C. McCulloch, Jr., U. S. Army: The Scientific and Administrative Achievement of the Medical Corps of the United States Army, *The Scientific Monthly.*

Special Article

THE MEDICAL OFFICER OF THE ARMY

IV-

RECRUITING; EXAMINATION OF RECRUITS; STATUS OF MEDICAL OFFICER

The recruiting service of the army is practically in the hands of the medical department. The recruit is first obtained by line officers detailed in cities and towns for the purpose. But they act only as advertising agents, and the approved candidate is sent to a recruit depot to be physically examined and sworn into the service. These recruit depots are distributed throughout the country, and are located at Fort Slocum, N. Y.; Columbus Barracks, Ohio; Jefferson Barracks, Mo.; Fort Logan, Colo.; Fort Sam Houston, Texas, and Fort MacDowell, Calif. At each depot there is a line officer in command, with a permanent personnel of selected line officers and noncommissioned officers who have charge of the training of the recruits. A large staff of medical officers is also on duty at these stations.

THE PHYSICAL EXAMINATION

When a recruit arrives at a recruit depot he immediately receives his physical examination. This is completed by medical officers detailed for the purpose, and is particularly thorough. Under the volunteer system of recruiting, pressure is at times brought to bear on the examining surgeon to accept men who are subnormal. This pressure may be from the man personally, or from some one else who is interested in him. This naturally adds to the difficulties of the situation, but it is always the wisest course for the examining surgeon to reject all those candidates who do not come up to the standard provided in the recruiting regulations.

The recruit is not required to be a physically perfect man, but must be structurally between certain limits. For instance, no man is accepted who is less than 5 feet 4 inches in height, or less than 120 pounds in weight. Also, no one is accepted who weighs over 190 pounds. There is no limit in height for recruits entering the infantry or the staff corps, but cavalry and artillery recruits cannot be over 5 feet 10 inches and 6 feet, respectively.

Following is a brief outline of the examination:

STATEMENT OF APPLICANT

Have you found that your health and habits in any way interfere with your success in civil life? And if so, give details:
.....
Have you ever since childhood wet the bed when asleep?.....
Do you consider that you are now sound and well?.....
What illness, diseases, or accidents have you had since childhood?.....
Have you ever had any of the following? If so, give approximate dates:
Spells of unconsciousness or convulsions:.....
Gonorrhea:..... Sore on penis:.....
Have you ever raised or spat up blood?.....
When were you last treated by a physician, and for what ailment?.....
Have you ever been under treatment at a hospital or asylum, and, if so, for what ailment?.....

I certify that the foregoing questions and my answers thereto have been read over to me; that I fully understand the questions, and that my answers thereto are correctly recorded and are true in all respects.

I further certify that I have been fully informed and know that if I secure my enlistment by means of any false state-

ment of misrepresentation I am liable to court-martial for fraudulent enlistment.

.....
(Signature of applicant.)

PHYSICAL EXAMINATION AT PLACE OF ACCEPTANCE.*

(Applicant stripped.)

Weight, ... lbs.; height, ...inches.
Eyes: .....
Vision—Right eye, ...; left eye, ...
Ears: .....
Hearing—Right ear, ...; left ear, ...
Girth of chest (at nipples): At expiration, ...inches.
At inspiration, ...inches.
Flat foot: .....
Remarks: .....

I certify that I have personally examined the applicant, and that, to the best of my knowledge and belief, he fulfills the physical and legal requirements for enlistment.

.....
Recruiting Officer.

.....
(Place.)

.....
(Date.)

*If the applicant is enlisted at place of acceptance, this report will not be filled out, except where examination at place of enlistment is made by a civilian physician.

PHYSICAL EXAMINATION AT PLACE OF ENLISTMENT

(Applicant stripped.)

Weight, ...lbs.; height, ...inches.
Girth of chest (at nipples): At expiration, ...inches.
At inspiration, ...inches.
General examination (head, chest, abdomen, extremities): ....
Nose and throat: .....
Heart: .....
Genito-urinary organs (urine will be examined in suspicious cases): .....
Hernia: .....
Hemorrhoids: .....
Flat foot or other deformities of feet: .....
Wassermann reaction (Regular Army only): .....
Eyes: .....
Vision—Right eye, ...; left eye, ...
Ears: .....
Hearing—Right ear, ...; left ear, ...
Teeth:

		Right	Left
Missing Teeth:	Upper,	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
	Lower,	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

(Strike out those that are missing.)

Rules for the examination of recruits are issued in pamphlet form from the War Department under the title of General Order 66 and Circular 2, and they set forth the defects which call for the rejection of candidates. These are all pathologic defects, and these specifications should be carefully followed by all officers performing this work.

BLANKS AND RECORDS

As soon as the recruit has passed his physical examination, he is sworn into the service by the recruiting officer, who is a medical officer. At the same time a blank, called the physical examination for enlistment, is filled in. This paper contains a record of his complete physical examination, and also any information in regard to the previous life of the recruit which can be obtained from him.

The enlistment paper, which is made out and signed by the recruit at the time he is sworn into the service, is principally the oath which every one takes on entering the military service, and is signed in the presence of witnesses.

A designation blank is also filled in and signed by the recruit. This is in reality his will, and he designates in this paper his heir or heirs. In case of his death during service, besides his personal effects, any pay due the soldier and six months' additional pay is sent to his heir.

After the recruit has been sworn in, his identification records are made. These records consist of any indelible marks which appear on his body (scars, moles, etc.), and the prints of all his fingers. These papers are sent on to Washington and are filed there at army headquarters as part of the record of the soldier. In time of war the photograph is not taken of volunteer troops.

Another paper is completed at this time and is called a descriptive and assignment card. This contains a complete description of the soldier, his principal physical characteristics and the record of vaccination, typhoid immunization and any other data which it is important for his future company commander to know.

VACCINATIONS

The man then receives his vaccination against smallpox and his typhoid prophylaxis. These two are administered to every recruit regardless of vaccination scars or unverified statements of previous typhoid prophylaxis. A record is made of this work, so that it is always known at what time such vaccinations have been given.

TRAINING OF THE RECRUIT

The recruit is then turned over to the recruit companies and there receives his first training. This training consists partly of physical exercises given primarily to develop the soldier as rapidly as possible and to permit him to perform his full military duties when he is assigned to a regiment. He also receives his training in discipline and the other duties of a soldier. The instruction of the recruit is participated in by the medical officers, who give instruction in personal hygiene, including talks on venereal diseases, the latter being considered from both the moral and the physical standpoints.

As soon as his training has progressed sufficiently to justify his assignment to a permanent company, the recruit is sent to some regiment. There his military training progresses in the company of his fellows, and after six or twelve months' service he is classed as a trained soldier.

FOOD AND CLOTHING

The food and clothing of the enlisted man are furnished him free of charge by the government, and his general welfare is looked after closely by both line and staff officers.

The rations of the army are furnished by the quartermaster's department and obtained by the organization commander on presenting a ration return. This is a blank on which is shown the number of men entitled to subsistence and the period for which this subsistence is drawn. This period is usually one month. Actual food can either be drawn from the store house, or the company commander receives a credit of a certain amount for each man's ration, and this credit can be used to purchase the supplies either from the quartermaster's department or the outside dealer, though it is required that any articles desired should be purchased from the quartermaster if these articles are on hand there. The money

value of the ration in recent orders was 34 cents per man per day. Those entitled to be rationed at the government's expense are enlisted men, prisoners of war, military prisoners, nurses, and civilians employed by the army in the field. The officer is not rationed by the government, but has to purchase his own food. Attached to each commissary store house is usually a sales commissary from which articles not included in the ration can be purchased by individual officers or men, or by any organization.

With each regiment or other organization in the field an exchange may be established by the organization. This exchange is a small store at which articles desired by the soldier can be purchased at a small price. Usually a small profit is charged, and this profit is turned into the mess of the organization to furnish additional articles of food to supplement the rations provided. These supplemented articles are not required, but serve to vary the food for the men. At the posts and other stations in the army these exchanges are in buildings provided for the purpose, and these buildings also contain gymnasiums, swimming pools and other means of amusement for the entire command.

PAY

All troops are paid monthly on pay rolls which are made out at the end of each month. These rolls contain the names of the men of the organization and any notations which the paymaster may require to assist him in accurately estimating the pay due the individual. These notations are to be accurately made so that the proper deductions or additions can be made. Officers are paid on pay vouchers presented by each officer on the last day of the month. These vouchers are simple statements, and usually there is no difficulty in filling them out in the proper manner. The pay for the different grades is as follows: first lieutenant, $2,000 per annum; captain, $2,400; major, $3,000; lieutenant colonel, $3,500; colonel, $4,000. In addition, lieutenants, captains and majors receive 10 per cent. increase of pay for every five years of service up to twenty years.

If officers are stationed where no quarters are provided for them, as in cities or towns, they are entitled to commutation of quarters, which is added to their pay by the paymaster at the end of each month. This commutation consists of $36 for first lieutenant, $48 for captain, and $60 for major. Under such circumstances he is entitled also to commutation of heat and light, which amount is shown by tables published in army regulations. If he is stationed where public quarters are provided he is entitled to a house, heat and light at that station. Every officer is also entitled to forage for his authorized mount and mileage at 7 cents a mile when traveling under orders.

CLOTHING ALLOWANCE

Every soldier on entering the service receives his clothing at the government expense. This clothing is not issued to him in the quantity he desires, but a certain amount of money is allotted to him as a clothing allowance. Clothing can be drawn every six months in value equal to the amount of the allowance provided for that period. If the value of the clothing drawn is more than the allowance for the period, the soldier is required to pay the difference at the end of the period. If any of this allowance remains to the credit of the soldier at the end of his enlistment, he receives that on his discharge from the service. At the present time the initial clothing allowance for each soldier is $43.05. The total amount of his allowance for his entire enlistment is $142.26.

TERM OF SERVICE

After the enlisted man has completed his term of service, which by law at present is seven years, he is discharged from the service of the United States. This entire seven years is not passed with the colors, but the soldier serves three years with the colors and is then furloughed to the reserve. It is allowable for the commanding officer to discharge a soldier after one year's service if that service has been thoroughly satisfactory and he is to all intents and purposes a trained soldier. During the time of the present war, men are being recruited to serve until peace is declared, then to be discharged from the service of the United States.

DISCHARGE

In addition to an honorable discharge at the expiration of a man's term of service, he may also be discharged for the following reasons: by order of the president of the United States or the secretary of war; by sentence of a court martial; by purchase; on a surgeon's certificate of disability; on account of sentence to imprisonment by a civil court; by a board of officers, and by order of one of the United States courts on a writ of habeas corpus.

To be discharged by sentence of a court martial, the soldier must have been tried by a general court martial, which is the highest military court allowed by law. This sentence must be approved by the military commander who convened the court for the trial of the soldier.

Discharge by purchase can be obtained by a soldier on account of some personal emergency, such as the necessity of obtaining a position paying more salary, for the support of dependent relatives. This discharge must also be approved by higher authority.

Discharge for disability is obtained after observation and examination by officers of the medical department; but their conclusions must be approved by the department or division surgeon. If a soldier is discharged for disability incident to the service, he is entitled to a pension, and also to residence in the National Soldiers' Home at Washington, D. C.

A soldier who is considered inapt or who does not possess the required degree of adaptability for military service, or is morally unfit, may be discharged on the recommendation of a board of officers which has thoroughly investigated his case.

When a soldier receives an honorable discharge, he is given a discharge certificate entitled "An Honorable Discharge from the Service of the United States." But when a soldier is discharged for fraudulent enlistment, or on account of having been disqualified physically or morally through his own misconduct, or on account of imprisonment by a civil court, he receives a discharge without honor. If he is discharged by the sentence of a court martial, he receives a "dishonorable discharge."

After thirty years of service a soldier is entitled to retirement on three-fourths pay. This service may be in either the army, the navy or the marine corps. In addition to the pay allowed them, these men are entitled to $9.50 per month for commutation of clothing and rations, and $6.25 per month in lieu of quarters, fuel and light. If living in the vicinity of an army post or station, they are entitled to medical attention free of charge.

(To be continued)

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SATURDAY, MAY 12, 1917

THE FIRST CALL OF OUR ALLIES WAS FOR PHYSICIANS. TWO UNITS ARE ALREADY ON THE ATLANTIC BOUND FOR FRANCE. THE DEMAND FOR MEDICAL MEN IS GREAT. THE TIME HAS ARRIVED FOR PHYSICIANS TO ACT. THE YOUNGER MEN ESPECIALLY WHO HAVE BEEN DELIBERATING AS TO WHETHER OR NOT THEY SHOULD OFFER THEIR SERVICES SHOULD DECIDE NOW. STOP DELIBERATING AND ACT!

PROPHYLACTIC INOCULATION AGAINST PNEUMOCOCCAL INFECTION

Since the artificial production of immunity has been one of the most effective means for the control of acute infectious diseases, it seems strange that so few attempts have been made to determine the value of this procedure in the prevention of lobar pneumonia. A formidable argument against prophylactic immunization in pneumonia has always been that one attack does not confer protection against a second attack but often leaves the patient more susceptible—a fact which seemingly differentiates lobar pneumonia from almost all other acute infectious diseases. In recent years, however, our ideas of pneumonia have greatly changed, and in the light of newer facts this objection cannot be seriously maintained. Neufeld and Händel and others found that an immune serum of high potency could be developed in animals by repeated inoculation with living virulent pneumococci which was highly specific only for certain strains. There were many strains of pneumococci that were in no way influenced by this immune serum, but equally efficient serums could be developed for these particular strains. These observations were greatly extended by Dochez and Gillespie[1] in America, and Lister[2] in South Africa, who demonstrated that pneumococci isolated from patients with lobar pneumonia could be divided into groups according to their biologic reactions. It has been found, too, that the serum of pneumonic patients or animals suitably immunized against pneumococci will agglutinate organisms belonging only to its homologous group, other groups being entirely unaffected. It is apparent, therefore, that the type of organism concerned in the causation of an attack of lobar pneumonia must be of primary importance from the standpoint of specific therapy, whether it is curative or prophylactic. Indeed, the use of an antipneumococcic serum on the basis of this grouping has already given encouraging curative results, particularly in the instance of Group 1 infections.

The application of these newer observations on the biologic differences of pneumococci to the problems of prophylactic inoculation has recently been made by Lister,[3] and the results are at least encouraging. In one group of experiments he injected rabbits with large doses of a pneumococcus vaccine containing equal amounts of the most important biologic groups concerned in the causation of lobar pneumonia in the Rand, where the disease is disastrously prevalent. Rabbits inoculated three times either subcutaneously or intravenously with such a vaccine developed opsonin and agglutinin for all the biologic types of organisms contained in the vaccine. Moreover, these immunized animals were resistant to large doses of virulent pneumococci of the homologous groups. In another group of experiments, men were inoculated subcutaneously with a vaccine containing 6,000 million dead pneumococci of each group against which immunity was desired. After three injections at seven day intervals, a marked increase in the opsonin and agglutinin for the homologous groups was observed in the blood, and these antibodies were specific for the various types of pneumococci contained in the vaccine. Furthermore, some degree of immunity, as judged by the reactions of the serum, seemed to persist for at least eight months after inoculation. When we consider these experiments, it is obvious that if the problem had been the immunization of rabbits against pneumococcal infection, it could be said that the method has been put to the crucial test and that the opsonin and agglutinin content of the immune rabbit serum would be a good index to the degree of immunity. In the instance of man, however, the results are not so striking. Although suitable inoculation will give rise to similar antibodies as in the rabbit, it remains to be determined whether there is sufficient immunity to have real protective value. Since there is a great mass of evidence at hand indicating that opsonins and agglutinins are important factors in the mechanism of recovery in lobar pneumonia, Lister's results in the immunization of man are certainly promising, and warrant continued study. This work invites further investigation, and stimulates the hope that some prophylactic measure of a specific nature may be developed for lobar pneumonia. The

1. Dochez, A. R., and Gillespie, L. J.: A Biologic Classification of Pneumococci by Means of Immunity Reactions, THE JOURNAL A. M. A., Sept. 6, 1913, p. 727.
2. Lister: Publication of the South African Institute for Medical Research, Johannesburg, 1913.
3. Lister: Publication of the South African Institute for Medical Research, Johannesburg, 1916, **8**.

practical application of such a measure would not be so difficult as before, because our knowledge of the epidemiology of pneumonia has been greatly extended in recent years.

THE ROUTINE EXAMINATION OF THE PLACENTA

The conscientious obstetrician should exhaust every source of information regarding fetal development and should place the facts at the disposal of the physician who will supervise the care of the infant during the early years of its life. If this thesis, by Professor Slemons[1] of the Yale Medical School, be accepted without question, it may properly be inquired whether the detailed examination of the placenta is an essential or even helpful procedure — something likely to throw light now and then on either prenatal difficulties or postnatal development. The placenta represents the fetal organ for respiration, nutrition and excretion. Usually the expulsion of the placenta and decidual membranes after parturition, and a cursory examination to determine whether or not a portion has been retained, represent at the bedside the maximum concern for the placenta.

Slemons maintains that this should not be. Antenatal pathology, he remarks, as yet poorly endowed with facts, depends for its development in great part on the solution of placental problems. Even when such structural phenomena as infarcts have been satisfactorily explained, hardly a guess has been hazarded as to their underlying cause, their physiologic significance, and their relation to fetal complications. Other rudimentary facts remain obscure, and on demonstration may radically change our conception of the manner in which the placenta performs its work.

What is the justification for insistence on a careful examination of the placenta? Among 600 placentas consecutively collected by Slemons in hospital practice, in forty-one instances naked-eye examination revealed abnormalities, some of which would surely have escaped recognition in an unsystematic, cursory inspection. These findings tended to check haste, and were conducive to more thorough obstetric technic on the part of those in attendance. Slemons points out that a better understanding not only of defective but also of normal placentation proceeds from the study of abnormal cases. Accordingly, intimate investigation of placenta praevia is well repaid, and likewise the investigation of a placenta which separates too early, or one which is retained. In the event of a subsequent pregnancy, such information may serve as a guide for the proper treatment. Contrary to the teaching of the past generation, which lacked accurate means of observation, Slemons insists that it is unsafe on the gross appearance of the placenta alone to base a diagnosis of syphilis. Even the Wassermann test may be subject to aberrations. Among 260 patients on whom serologic observations were made, there were twenty-two patients suffering from albuminuria, and in fourteen the Wassermann reaction was negative. Approximately, then, in every third case there was a positive reaction. Whether or not syphilis underlies the toxemias is a question, but it seems more likely that some substance in the blood, referable to the metabolic disturbance, causes slight fixation when an examination is made according to the Wassermann technic. The chief source of confusion in the interpretation of the Wassermann test during pregnancy lies in the presence of autointoxication attended by albuminuria.

The recorded fact that one out of five or six placentas may present some departure from the normal is based on a considerable number of cases. What rules, then, should be formulated to secure appropriate information? Slemons thus summarizes his own views:

> In well-organized clinics the careful study of the placenta should be insisted on not only at the bedside but also in the laboratory. Such rigid requirements cannot be exacted of the practitioner, but if he wishes not to overlook important data he should supplement bedside observations with study of the placenta in his laboratory. It should be weighed and measured, gross abnormalities noted, fresh tissue teased, and the chorionic villi studied microscopically. These data should be recorded and thus become more reliable, if in the puerperium some complication develop which requires for its interpretation a knowledge of the placenta. When the teased villi suggest the presence of syphilis the placenta should be sent to a pathological laboratory and stained sections prepared to establish the diagnosis. Simultaneously a Wassermann test on the mother's blood should be made. Similar precaution is advisable if delivery occurs prematurely. At times a diagnosis of syphilis will be the result, but more frequently the investigation will remove all suspicion of that disease. Finally, if the infant is stillborn or dies within the first few days of extra-uterine life, study of the placenta should be comparable in painstaking care to that given the organs at an autopsy.

ACIDS AND ALKALIES IN RELATION TO DIABETES

The possible bearing of the reaction of the body fluids and tissues on the physiologic activities which proceed in the cells of the organism has recently become prominent in the discussion of many functional transformations. Not long ago, the reaction of the blood and a few characteristic secretions were grossly recorded by the color changes which they produced on one or two familiar indicators like litmus; but since the reaction in a physicochemical sense has been measured by more delicate methods of estimation, and the preponderance of hydrogen or hydroxyl ions has been more accurately determined under a variety of conditions, a remarkable regulatory efficiency of the body has been discovered. The living mechanism is apparently constituted to carry out its essential performances under fixed conditions of environment. Alterations in the latter, in the sense of change of reaction, promptly cause some regulatory response. We speak, therefore,

1. Slemons, J. M.: The Results of a Routine Study of the Placenta, Am. Jour. Obst., 1916, **74**, 204, 295.

of an acid-base equilibrium, a neutrality regulation, as a vital characteristic of the physiologic outfit.

More illustrations are being revealed from year to year. The pathology of metabolism, respiration and excretion has at length become concerned with the meaning of disturbances of reaction for bodily well-being. Acidosis and acid intoxication are expressions now frequently used. Alkalosis has recently come into vogue to express a disturbance of acid-base equilibrium in a contrary direction. The respiratory mechanism is singularly sensitive to minute changes in the hydrogen ion concentration of the blood. The kidneys are not indifferent to the reaction of the fluid which provokes them to secretion. There is an intimate, though quite different sort of relationship between the acid-producing function of the stomach and the alkali-producing activity of the pancreas. For example, the amount of pancreatic juice produced by any food appears to be proportional to the quantity of gastric juice which it calls forth. The neutralization of the acid gastric chyme by the alkaline secretions which reach the small intestine is the usual, and apparently desirable sequence in the events which make up the story of alimentary changes.

Murlin and Sweet[1] inquire what significance the regulation of intestinal alkalinity to stomach acidity may have for events beyond the alimentary wall. If, they ask, it is essential to health that gastric acidity be completely neutralized, what would be the consequence of preventing such neutralization by removal of the pancreas, considering that the pancreas, as Boldyreff shows, produces more than ten times as much alkali as appears in the bile, and twenty times as much as in the intestinal juice? Obviously hydrochloric acid might remain unneutralized in the alimentary tract, and being absorbed as such might induce phenomena characteristic of acid intoxication.

The combustion of sugar in the organism is modified in some way by the reaction of the cells or the fluids which bathe them. Acidosis accompanies those conditions in which carbohydrates fail to be burned up properly in the body. In its attempt to correct this maladjustment, compensatory amounts of acid usually are excreted in the form of acid phosphates by the kidneys; or the body neutralizes the acid with ammonia deflected from its normal metabolic channels. Acid intoxication may give rise to glycosuria. The conversion of glycogen into unburned glucose which is responsible for this may be prevented by corrective administration of alkalies. Furthermore, there is reason to believe that alkalies may actually further the metabolism of glucose by facilitating its oxidation.

The frequent, if not invariable involvement of the pancreas in human diabetes, and the familiar experimental production of glycosuria by excision of the pancreas have suggested the possibility that the consequences of pancreatectomy might be due in large measure to an acid intoxication resulting from loss of sufficient alkali-producing function.[2] The numerous incidental observations which tend to strengthen this view cannot be reviewed in detail here. The conviction that the stomach contributes in some way to the etiology of diabetes mellitus has frequently been expressed by clinical writers. The situation as regards the unneutralized gastric acid is presented thus by Murlin and Sweet:[1]

> When acid is taken from the blood by the gastric glands, the venous blood in the gastric veins must be relatively richer in hydroxyl ions. Accepting the view commonly held that the chlorin ions of hydrochloric acid are derived from sodium chlorid in the blood, there would then be a relative excess of sodium ions left behind. Normally, this disturbance as regards sodium is at once restored by the production of the sodium carbonate by the pancreas, for not only is the amount of alkali produced by the pancreas proportional to the production of acid by the stomach, but, as appears clearly in the work of Pawlow's pupils, its secretion begins as soon as the production of acid begins in the stomach. The blood from gastric and pancreatic veins, reunited in the portal, has then a normal reaction before it enters the liver. . . . When the pancreas is removed entirely we might expect also that the kidney would remove the excess of sodium ions resulting from secretion of hydrochloric acid into the stomach until this acid were again absorbed into the blood. Even if this were not the case, however, the liver would not suffer from a temporary excess of such ions (combined probably as disodium hydrogen phosphate or as sodium carbonate or with protein), for the tolerance of protoplasm for free hydroxyl ions is much greater than for free hydrogen ions. The trouble would come when the hydrochloric acid reached the duodenum.

The new hypothesis presented thus postulates that the hydrochloric acid produced in the stomach and left unneutralized in the duodenum after pancreatectomy is absorbed by the portal system and poisons the liver, causing the rapid onset of the resulting diabetes. In support of this, Murlin and Sweet[1] have observed that ligation of the pylorus at the time of pancreatectomy, an operation invariably attended with glycosuria, delays the appearance of sugar in the urine. If complete gastrectomy is performed in diabetic animals, little or no glycosuria is developed ordinarily. Furthermore, animals with the pancreas removed after gastrectomy do not exhibit the usual profound toxemia of a simple pancreatectomy.

Alkali therapy has long been practiced in connection with diabetes. The prevailing opinion has been that the alkali affects only the acidosis. Since the latter factor has been found to be controllable by dietary regulation, particularly by fasting and restriction of fats in the ration, the liberal use of alkalies in diabetes has been given up by some therapeutists. These newer observations have raised questions fraught with profound significance not only for the theory of the etiology of glycosuria but also for the clinical management of the diabetic condition.

1. Murlin, J. R., and Sweet, J. E.: Pancreatic Diabetes in the Dog, IV, The Influence of Pylorus Exclusion and of Gastrectomy upon the Effects of Pancreatectomy, Jour. Biol. Chem., 1916, **28**, 261.

2. Murlin, J. R.: Post-Graduate, 1914, **29**, 7.

Current Comment

BIOLOGIC THERAPY IN THE WAR

War, with its immense numbers of diseased and wounded men, affords opportunity to determine the efficacy of various scientific procedures. The present, the greatest war the world has ever known, is serving as a crucible in which many biologic products are being tested. When peace returns and all of the data from the various combatant countries become available, we should know which products, if any, may be removed from the experimental list and placed among the agents of established value. According to McCoy, whose discussion of this subject appears in this issue,[1] there are five agents — vaccine virus, diphtheria antitoxin, tetanus antitoxin, antimeningococcus serum, and antityphoid vaccine — which may be regarded as indispensable in connection with conditions which prevail when large bodies of men are brought together. In addition to the agents mentioned by McCoy, that now may be regarded as necessary, there are some which at present give enough promise of value to make their use worth considering. In this country, fortunately, we are better situated than are any of the European nations, so far as facilities for producing biologic supplies are concerned. The firms manufacturing this class of medicaments can, if need be, meet the demands of our own army and civilian population, as well as those of our allies. The essential nature of the products makes their manufacture in large quantities comparatively simple. With the good sanitary conditions that we may reasonably expect to prevail in our concentration camps, the need for various agents not thoroughly tried out, such as antidysentery serum, antipneumococcus serum, and vaccines against dysentery, cholera and epidemic meningitis, should not be extensive with the possible exception of the meningococcus vaccine. Fortunately biologic products grow in a manner not applicable to munitions or, in fact, any other indispensable material of modern warfare. The supervision of biologic products by the United States Public Health Service safeguards the interests of the manufacturer and of the consumer.

THE STATUS OF ENROLMENT OF MEDICAL OFFICERS

An old proverb says not to count one's chickens before they are hatched. This principle should apply when discussing the status of recruiting for the Medical Departments of the Army and Navy. It is well to realize that simply enrolling one's name on a list or making a verbal statement to the effect that one is willing to serve with this or that unit, or unofficial organization or committee, does not qualify one to be counted as an officer of the Medical Reserve Corps. To be so counted, one must be enrolled — that is, commissioned — in the Medical Reserve Corps. To thus enroll, it is necessary first to fill out the regular application blank, such as appeared in THE JOURNAL two weeks ago; second, to have it certified to before a notary public; third, to send the application to the nearest examining board; and fourth, to pass the examination. The results then are forwarded to Washington, where the final decision is made as to whether or not the applicant is accepted. If the applicant is accepted, he receives his commission and with it the oath of allegiance, which he must sign, swear to and return to Washington. Only then can he be regarded as a member of the Medical Reserve Corps or of the Medical Corps of the Army. The time has come to face facts, to know exactly where we stand, and then only shall we know what remains to be done.

1. McCoy, G. W.: Usefulness of Serums and Vaccines Under War Conditions, THE JOURNAL A. M. A., this issue, p. 1401.

THE NEED OF MEDICAL OFFICERS

Until the last two weeks, the attempts to secure men for the medical departments of the army and navy, and for their reserve corps, were not encouraging. On the first of May there were about 4,000 members of the Reserve Corps of the Army, including approximately 3,500 of the old Reserve Corps. Some of the latter, as has been repeatedly stated, are beyond the age limit, and many have not yet intimated that they are willing to accept a commission in the new Reserve Corps. During the last two weeks, however, conditions have improved, but since not all of the applications go to the central office now, some being sent to the various examining boards, it is impossible to tell just how fast recruiting is going on. As we have already stated, if an army of 2,000,000 men is finally formed, it will mean that at least 20,000 physicians will be required. At the present time, including those in the regular Medical Corps, there are not 5,000 who are commissioned or who have been approved for commission; hence the actual need for the entire army, if and when it is completed, is 15,000 more men than are yet commissioned. There are perhaps 1,000 applications now in the various stages of progress toward acceptance or rejection of the applicant, although for the reason given above this necessarily is estimated. All in all, therefore, while there is no reason for fearing that the medical profession will not respond to the limit required by the government, at the same time considerable work and individual self-sacrifice will be necessary before the required number is obtained.

WHAT IS ADIPOCERE?

Adipocere is the product of a process that may take place when corpses are buried for some time in wet or damp localities. To the pathologist this interesting so-called corpse wax at one time possessed a special interest in that it was supposed to furnish direct evidence of the formation of fat from proteins. This conclusion has, however, long since been successfully disputed; and it has recently come to be understood that in the formation of adipocere the fat of the tissues itself takes part. Fat corpses are most likely to become the subjects of adipocere production, and the preservation of the general form of the body in the cases on record is due to the peculiar distribution of the corpse wax and the retention of the bones. The actual quantity of adipocere may not be large. Ruttan

and Marshall[1] of the Department of Chemistry at McGill University, Montreal, have given a description of the composition and a tenable indication of the formation of this substance, which has been an interesting chemical puzzle since its description by Fourcroy in Paris in 1787. They feel justified in concluding that adipocere is the residue of the preexisting fats of animals. It is composed almost entirely of the insoluble saturated fatty acids left after the slow hydrolysis of the fats in wet ground. The protein matter has entirely disappeared, and the glycerol, soaps, etc., resulting from the hydrolysis have been carried away in aqueous solution.

MEDICAL LEAVEN IN THE ADVERTISING LUMP

A notable series of articles on honest advertising in local fields is running in the New York *Tribune*. They are by Samuel Hopkins Adams, which in itself is assurance of their readability and accuracy. In last Sunday's *Tribune*, dealing with the situation in New Orleans, Mr. Adams pointed out that in the advertising practices of a community there can be no standing still; the movement is either forward or backward. "New Orleans is on the march, facing front!" The influences which unite to keep local advertising in New Orleans on a decent basis are three, said Mr. Adams. The first is Dr. Oscar Dowling, president of the State Board of Health; the second is the New Orleans *Item*, while the third is the united endeavor on the part of the best merchants, expressed largely through the agency of the Advertising Club of that city. In speaking of Dr. Dowling's influence on the situation Mr. Adams says:

"If one may borrow a term of lawlessness for application to a strictly legal procedure, Dr. Dowling is the 'direct actionist' in the local field. Among public health workers he has a national reputation as the foremost quack-fighter holding any official medical position in this country. The manufacturers of that dubious boon to womanhood, Wine of Cardui, have a libel suit of almost *Tribune* magnitude against him, which, however, they are not pressing to trial with any undue haste. Various other patent medicines have threatened him, and essayed to get him out of office, but without success. When the Louisiana advertising law was enacted he seized on it as a new weapon in his fight. Working in conjunction with the Shreveport Ad. Club, he arrested the Tanlac agent there. In New Orleans he swore out a warrant for the local purveyor of an outrageous fake called Vitalitas. It is an interesting fact, by the way, that the State District Attorney is not moving to bring this case to trial, though it is two and a half years since the arrest was made. While Dr. Dowling's astivities are confined to the worst and most harmful class of fake advertisers, the quacks, nevertheless his influence is potent throughout the entire field. As one of the local vigilance committee put it: 'Dowling has shown us that the law is there to be used when we need it.'"

1. Ruttan, R. F., and Marshall, M. J.: The Composition of Adipocere, Jour. Biol. Chem., 1917, **29**, 319.

Informing the Patient.—There is a natural hesitancy on the part of many members of the medical profession in telling patients that they have tuberculosis. This should be overcome. It is unjust to the patient; it is associated with danger to the community, and it lowers the standing of the medical profession in the community.—S. J. Deehan, M.D., *Monthly Bulletin*, Philadelphia Department of Public Health and Charities.

Medical Mobilization and the War

Application Blanks Must Be Sworn To

The surgeon-general of the army desires THE JOURNAL to announce that those contemplating making application for appointment in the Medical Reserve Corps must have the statements made on the personal history blank certified to before a Notary Public or other person authorized to administer oaths and instead of forwarding the blank to the surgeon-general's office, the applicants may communicate with the president of any of the boards heretofore published in THE JOURNAL, as these boards are authorized to make the examinations without reference to this office. This course has been taken in order to expedite the issuing of commissions and lessen the amount of correspondence going through this office. A list of these boards will be sent by THE JOURNAL on receipt of a self-addressed envelope.

Military Measures Against Venereal Diseases and Alcohol

As a measure looking toward the prevention of venereal diseases and alcoholism in the military services of the United States, the Council of National Defense has recommended that a zone under military control shall be created about every military command, within which zone prostitution will not be tolerated and the sale of alcoholic beverages to the military forces will be under the immediate control of the Army and Navy.

This action was taken on the recommendation of the General Medical Board of the Council, which advised that the Departments of War and of the Navy officially recognize that sexual continence is compatible with health and that it is the best preventive of venereal infection, but which advised further that with a view to diminishing opportunities for infection prostitution be kept as far back from all military and naval establishments as practicable. Recognizing the difficulty of procuring the enactment of the legislation necessary to permit and to require the civil authorities having control of the territory immediately outside of military establishments to afford the necessary protection to the soldiers, sailors and marines on duty there, and recognizing the necessity for such protection, the General Medical Board urged that zones of safety be established under the control of the military forces, as a war measure. The prohibition of the sale of alcoholic beverages to sailors, soldiers and marines within the prescribed zone, and of the use of these beverages by these men within those limits, was advised primarily because of the intimate relation between prostitution and the use of such beverages.

With a view to diminishing the temptation to which men are subjected when confined for considerable periods of time in camps and other similar establishments, away from the restraining influences of domestic and ordinary social life, the General Medical Board recommended that provision be made for suitable recreational facilities. This part of the program has been seriously taken up by the War Department, which has created a Commission on Camp Activities, under the chairmanship of Mr. Raymond B. Forsdick of New York. It is the purpose of this commission to provide facilities for recreation and entertainment, to encourage wholesome sports and athletic games, to promote athletic contests, and generally to provide for the most wholesome relations between the military and the civil populations.

In view of the magnitude and gravity of the danger of venereal diseases, not only to the military forces in active service but also to the civil population on the return of such forces to their ordinary places in society at the close of the war, or when discharged because of disability, the General Medical Board has recommended that a special division be created in the medical department of the Army and in the medical department of the Navy, for the control of venereal infections. A careful study is now being made to see whether such a scheme can be satisfactorily fitted into the existing medical organizations, and if so, how best to accomplish that end.

Medical Students and Conscription

A medical student writes: "Can you give me any information as to whether or not a medical student who intends to finish his medical work as soon as possible will be subject to draft for service before he has completed his course, providing he will offer his services as soon as he finishes his course

of study? Without any such assurances the medical student will be in a most uncertain position and might better enter one of the Officers' Training Camps and make his education and training be of more value than in the line as a regular. . . . I am registered to enter Harvard Medical School as a junior this next fall and am desirous of learning my status as a subject to draft under these conditions." The General Medical Board of the Council of National Defense has urged that medical students, and college students preparing to enter medicine, do not enlist but continue in college until they graduate, since the greater need of the country is for their trained service. It was recommended—although no action has been taken—that such men should wear some insignia to show that they were not "slackers." The General Medical Board took this action specifically because it was realized that many young men would be placed in the same position as our correspondent. The board desired also to avoid the error made in England by which the normal supply of men entering the profession each year was not maintained. Undoubtedly, when the law for selective conscription is put into effect, such students will be specifically exempted.

The Medical Services in the Somme Advance

In the *British Medical Journal*, April 14, several points of immediate medical military interest are noted concerning the recent advance in the Somme region. It was found necessary, of course, to shift many medical units, including the casualty clearing stations. These units had occupied their stations during the winter. The shift involved a great deal of work and threw new light on the relative importance of horse drawn and motor propelled vehicles. Since the coming of the automobile ambulance and hospital wagon it has been suggested that horse drawn vehicles be abandoned entirely. It was found, however, that a certain number of horse drawn vehicles in each field ambulance was of the utmost importance. The ground was so much cut up by shell fire and by traffic after the frost in addition to intentional obstructions which had been created that there was a broad stretch of country which could not be traversed even by those ambulances created out of the smallest (Ford) cars. The horse ambulances were able to go ahead freely and easily. It was therefore arranged that the horse ambulances should bring the cases back to the place where the totally impassable parts of the road commenced. At these places squads of stretcher bearers took the patients from the field ambulances and carried them until they reached the automobile vehicles. At times these "carries" extended for several miles. Owing to the character of the ground and the scattered nature of the fighting, it was necessary to collect the wounded by day instead of by night, but fortunately the casualties in the medical department were not exceedingly numerous.

The Shortage of Physicians in England

In discussing the Somme advance before the House of Lords the question arose as to whether it would be possible to give the benefit of a special medical board to those who might wish to be examined by it. Lord Derby said that this had been found impossible. It would mean that practically every one who did not want to serve would see a possible loophole for escape and would appeal to the board. It was not possible to form numerous boards all over the country for the simple reason that there were not at the present moment in England physicians enough for all the work which the War Office had to put on them. Lord Derby stated that the country should know, too, that whereas some people thought that the work of the Royal Army Medical Department was without any danger, more than 400 physicians had been killed and wounded in the Somme battle line. "We are," said Lord Derby, "I will not say critically short, but certainly lamentably short of doctors for all the work which we have for them at the present time, and, I am afraid, in the immediate future."

Young Men Needed for Hospital Corps

Young men who desire to enter the hospital corps of the navy should enlist at once as vacancies are being rapidly filled. This service is particularly inviting to the recruit who selects the navy for his life work as he receives careful training under medical direction and in congenial surroundings, the pay is good and promotion rapid. The recruit who enlists for a stated period receives training which will be of value to him in his civil life. Send the young men of your acquaintance who are interested in this phase of military work to the nearest naval recruiting office. Instruct them to speak to the physician on duty there.

The Duty of Members of the Old Reserve Corps

There are a large number of members of the old Reserve Corps who have not notified the surgeon-general's office as to whether or not they wish to be transferred and commissioned in the new Medical Reserve Corps. The members of the old Reserve Corps should act now, not wait until June 3—the date on which the old Medical Reserve Corps becomes obsolete—so that their status may be known.

War Budget for the Medical Department.—In the first appropriation bill in the war budget which was sent April 30 there is an item of $23,780,000 for the Medical Department of the army, and $7,300,000 for additional equipment expense for the Bureau of Medicine and Surgery of the Navy.

Young Physicians Pass Tests for Navy.—A competitive examination was held at Fordham University, April 17, for appointments to the medical division of the United States Navy, as a result of which seventeen young physicians will enter the federal service, June 1, with the rank of junior lieutentant. Of these, eight were from Fordham, four from Yale, four from Cornell, and one from Columbia.

Forward Blanks to Examining Boards.—To relieve the surgeon-general's office, examining boards have been created in various parts of the country for the purpose of examining applicants for the Medical Officers' Reserve Corps. Applicants for appointment to this corps should send their personal application blanks, when filled out and certified, to the nearest board. These boards were listed in THE JOURNAL for April 28, page 1267, and May 5, page 1330. A list of these boards will be sent on application to THE JOURNAL.

Universities and Colleges Supply Ambulance Companies.—The American Red Cross which is organizing and training ambulance companies throughout the country is placing especial emphasis on the formation of these units at the colleges and universities, as these groups can be most conveniently assembled and most effectively trained. This service will probably be the first sent to the European battle fields, and is therefore particularly attractive.

Bureau of Standards to Examine Blood Counting Apparatus.—The Bureau of Standards of the Department of Commerce has drawn up specifications for blood counting chambers and dilution pipets. A tentative schedule of fees for examination of such apparatus has been decided on, namely, $1.50 each for counter chambers and 35 cents for each interval of the pipet tested. As at least two intervals on each pipet will be tested, the minimum charge will be 70 cents.

New Military Hospital.—On account of sickness and accidents among guardsmen now stationed on duty, a new hospital has been fitted out at Fort McHenry, Baltimore. A compartment for the housing of sick soldiers has been erected, with separate quarters for examination. A quarantine has also been established. Major Herbert C. Blake has been appointed district superintendent of the hospital, with Dr. William J. Coleman, of the University of Maryland staff, as assistant superintendent.

The English Red Cross in Italy.—The *Riforma Medica* of Naples relates that the equipment for two more hospitals has arrived in Italy sent by the English Red Cross. One with 300 beds is being set up at Gradisca, the other, with 150 beds, at Castelletto. This supplements their other units scattered through the Trentino, Carnia and Carso, including one equipped for Roentgen work. Our exchange adds that the English Red Cross has thus cared for 180,000 wounded and sick soldiers and taken 4,000 radiographs.

Physicians Favor Prohibition During War.—At the meeting of the American Society for Clinical Investigation held in Atlantic City, May 1, under the presidency of Dr. Haven Emerson, health commissioner of New York City, a resolution was adopted recommending that the manufacture of alcoholic beverages and their importation to the United States be prohibited for the duration of the war and for at least one year thereafter. This action was based solely on medical grounds as it was felt that the present time affords an unprecedented opportunity for inaugurating a convincing demonstration as to the value of abstinence from alcoholic beverages.

War Fund of Rockefeller Institute.—The Rockefeller Foundation announced, May 3, that it had appropriated $475,000 to be spent in the United States for medical research and maintainage as the beginning of war work; $400,000 for the continuance of the relief activities now being carried on abroad; $200,000 to the Rockefeller Institute for Medical Research for the equipment of the Carrel Hospital, and $60,000 to the Rockefeller Institute, for the instruction of surgeons in new methods of diagnosis, for the preparation of serums, and to find improved means for treating peritonitis and shock.

Bill to Abrogate the Patent on Salvarsan.—H. R. 4190 was introduced in the House of Representatives on May 4, 1917, by Congressman Emerson of Ohio. It was referred to the Committee on Patents and ordered to be printed. Following is the text of the bill:

To abrogate the patent upon the article known as salvarsan.

WHEREAS, The use of salvarsan is now necessary to the medical profession and the output of the article is so handicapped because of certain patent rights; therefore

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the patent rights issued upon the article known as salvarsan is hereby abrogated and set aside and declared null and void.

Orthopedic Surgeons Sail for England.—The following orthopedic surgeons will sail for England about May 15. They will go under the leadership of Joel E. Goldthwaite of Boston and will serve in English hospitals under the direction of Col. Robert Jones: Carlton R. Metcalf, Concord, N. H.; William G. Erving, Washington, D. C.; Roy Abbott, San Francisco; A. R. McCausland, Boston; De Forest P. Willard, Philadelphia; H. W. Orr, Lincoln, Neb.; Sydney M. Cone, Birmingham, Ala.; Mitchell Langworthy, Chicago; Murray Danforth, Providence, R. I.; Charles F. Eikenbary, Spokane, Wash.; Walter I. Baldwin, San Francisco; H. A. Durham, New York; James C. Graves, Jr., Spokane, Wash.; Roades Fayerweather, Baltimore; F. C. Kidner, Detroit; L. C. Spencer, Baltimore.

Ambulance Notes.—Christ Episcopal Church, Waukegan, Ill., has purchased and will maintain an ambulance for service in France, which will be known as the Chicago Diocese Ambulance, and will be driven by the son of Bishop Anderson. ——A unit of the University of California Ambulance Corps passed through Chicago, May 6, en route to France.——There sailed from an Atlantic port, April 5, twenty-three ambulances, drivers from Chicago, and on the same ship were six ambulances donated by the people and organizations of the city.——The children of Mr. and Mrs. Charles A. Plamondon, Chicago, announced on May 7 the gift of an ambulance for service on the western front, which will be known as the Charles Mary Plamondon Ambulance, and is given in memory of the parents of the donors, who were drowned at the sinking of the *Lusitania*.——Section 17 of the American Field Ambulance has left for the French front, May 5. The personnel of the section is composed of university men from Chicago, Wisconsin, Cornell and other institutions.

Federal Aid for Rural Sanitation Recommended.—The Conference of State and Provincial Boards of Health, which met in Washington, D. C., on April 30 and May 1, adopted a resolution under which an effort will be made to procure the enactment of federal legislation for the protection and promotion of the health of rural communities along the lines that have been adopted to stimulate agriculture, to promote the building of good roads, and to encourage vocational education. It is proposed that Congress make appropriations from time to time for health work in rural districts, to be apportioned among the states and territories in proportion to their respective populations, the allotment to a state or territory to become available only to the extent of state or territorial appropriations for like purpose, and to be used only for the execution of projects approved by the United States Public Health Service.

Standardization of Biological Products.—The official Conference of State and Territorial Health Officers with the United States Public Health Service, which met in Washington, D. C., on April 30, adopted a resolution recommending that the service named establish and promulgate standards as to potency with reference to all biologic products, vaccines and serums, not only with relation to diphtheria and tetanus antitoxin but especially with relation to antimeningococcus and pneumonia serums and vaccines for typhoid fever, paratyphoid fever and bacillary dysentery. The resolution was based on a report to the conference that all of the antimeningococcus serum in an entire state was found at one time last year to be worthless, and that much of such serum sent to France and England in the early days of the war had given unsatisfactory results, which had disappeared only after the Rockefeller Institute had inquired into the methods of manufacture used by those who had supplied such serum and had provided a proper supply. Antityphoid vaccine, it was reported, had also been found to be bad.

Base Hospital Units Sail.—Lakeside Base Hospital No. 4, Cleveland, sailed, May 8, for immediate service abroad. The unit will be under command of Major H. L. Gilchrist. Its commissioned personnel is as follows:

George W. Crile, 1921 Prospect Avenue, director; William E. Lower, 1921 Prospect Avenue, assistant director, surgical section; Charles F. Hoover, 700 Rose Building, assistant director, medical section; Howard T. Karsner, Lakeside Hospital, assistant director, laboratory section. Henry L. Sanford, 1021 Prospect Avenue, staff surgeon; Harry G. Sloan 1021 Prospect Avenue, staff surgeon; Thomas P. Shupe, 1021 Prospect Avenue, staff surgeon; Walter B. Rogers, Lakeside Hospital, staff surgeon; Charles A. Bowers, Lakeside Hospital, staff surgeon; Allen Graham, Lakeside Hospital, staff surgeon; Gordon N. Morrill, 2047 East Ninth Street, orthopedist; William E. Bruner, 13380 Euclid Avenue, ophthalmologist; Chester D. Christie, Lakeside Hospital, staff physician; Richard Dexter, 815 Rose Building, staff physician; Herbert V. Weibranch, Lakeside Hospital, staff physician; Harry V. Paryzek, Lakeside Hospital, staff physician; Marion A. Blankenhorn, Lakeside Hospital, staff physician; Charles W. Stone, 602 Rose Building, neurologist; Harry Roswell Wahl, Lakeside Hospital, bacteriologist; Walter C. Hill, University Club, roentgenologist; William R. Barney, Lakeside Hospital, adjutant; John F. Stephan, 1404 New England Building, dentist; Bertram S. Rothwell, 430 Rose Building, dentist; Leroy B. Sherry, Lakeside Hospital, registrar; Andrew R. Warner, Lakeside Hospital, quartermaster.

The Harvard Medical School Unit, officially known as Red Cross Base Hospital No. 5, sailed, May 11, for France. It is under command of Major R. W. Patterson. The commissioned personnel of the unit is as follows:

Dr. Harvey Cushing, director; Dr. David Cheever, assistant director (surgical); Dr. Roger I. Lee, assistant director (medical); Dr. Richard P. Strong, assistant director (laboratory); Dr. Louis H. Burlingham, adjutant; Dr. William H. Potter, dental surgeon; Dr. Walter B. Cannon, laboratory section; Dr. George S. Derby, ophthalmologist; Dr. Robert S. Osgood, orthopedist; Dr. Percy Brown, roentgenologist; Drs. Walter M. Boothby, Edward B. Towne, Gilbert Horrax, Samuel C. Harvey, Thomas R. Goethals, staff surgeons; Dr. James L. Stoddard, bacteriologist; Drs. Reginald Fitz, George P. Denny, George R. Minot, Oswald H. Robertson, Henry Lyman, staff physicians; Dr. William S. McCann, registrar; Capt. Augustus G. Reynolds, quartermaster; Dr. Jacob B. Bruce, assistant quartermaster.

Special Regulations on Designation of Medical Section, Officers Reserve Corps.—By special regulations for Officers Reserve Corps No. 43, the general designation "Medical Section, Officers Reserve Corps" is changed to "Medical Department, Officers Reserve Corps," with subsections as follows: (a) Medical Reserve Corps. (b) Dental Reserve Corps. (c) Veterinary Reserve Corps. The official title should be similar to the following: Major (Captain or First Lieutenant) John Doe, Medical Reserve Corps, U. S. Army.

Instructions to Medical Officers of the Officers' Reserve Corps.—Under date of May 4, the surgeon-general's office issued Circular 18 to all medical officers of the Officers' Reserve Corps. The circular stated:

1. It is contemplated that you will shortly be ordered to active military duty.

2. You should, therefore, at once provide yourself at your own expense, with the following articles of uniform, so as to be in readiness to obey orders. The following is a minimum that you should have at once. They can be purchased from the Quartermaster's Department at the nearest post, or you can get them from private dealers: 1 hat, service; 2 breeches, service O. D.; 1 coat, service O. D.; 1 leggings, leather, officer's; 2 pairs shoes, russet; 2 shirts, woolen, O. D.; 1 sweater, army; 1 slicker, saddle.

The following must be purchased from private dealers in military uniforms and equipments: 1 hat cord, officer's; collar insignia and insignia of rank; 1 note book, pocket, manifolding; 1 compass, 1 watch.

You may use your own underclothing, socks, handkerchiefs, and toilet articles. Additional articles to the above list can be purchased later.

3. Provide yourself with 1 bedding roll, 2 army blankets, 1 sleeping pad (or two comforters); 1 mosquito bar, cot; 1 canvas basin, 1 canvas bucket, 1 collapsible candle lantern; 1 folding canvas cot; 1 folding camp chair. These are sold by private dealers. If possible, provide yourself with a trunk locker, army pattern, sold by the Quartermaster's Department or private dealers.

4. Your necessary mess equipment includes: 1 canteen, cavalry; 1 canteen strap, cavalry; 1 cup; 1 knife; 1 fork; 1 spoon; 1 meat can.

You can purchase these from the Ordnance Officer at the nearest military post; or write to the Commanding Officer, Rock Island Arsenal, Rock Island, Ill., for the necessary vouchers and costs. Private dealers also sell them.

5. The horse equipment, including spurs, which you will need, can be drawn without cost from the Ordnance Department on memorandum receipt, on joining your first station.

6. The shelter tent halves, poles and pins you will need can be drawn from the Quartermaster's Department on memorandum receipt at your first station.

7. If the Government calls you out, it needs your services at once. Promptly obey your order to report for duty on its receipt. Only the War Department can authorize delay.

8. Buy your own ticket from your home to your station. You will later be reimbursed at the rate of 7 cents per mile if traveling without troops. If there is an army quartermaster in the vicinity, see him, for there are a few land grant railroads over which the Government issues transportation without cost to you, and over which you accordingly draw but 4 cents per mile in mileage.

9. Ship your bedding roll with your baggage on your ticket.

10. On arrival at your station, report yourself in uniform, to the commanding officer for duty.

11. He, or an assistant, will see that you are provided with quarters, and inform you how to arrange for messing facilities.

12. The Government provides you with fuel and lights gratis.

13. You are paid monthly on special vouchers, in amount corresponding to your grade and length of service.

14. If you have rank below that of major and own your own horse, which must come up to certain Government standards as to age, size and soundness, you will be paid $150 yearly in addition to your pay, $200 if there are two horses. Forage and stabling for the same are furnished you without cost.

15. In anticipation of your orders, at once start systematically to familiarize yourself with the contents of any official manuals, regulations, or books of reference on medico-military matters which you may have.

16. For further information, secure the advice of any medical, or other officer, of the Army or National Guard in your vicinity.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. H. George Crease, Bakersfield, fell into an open cellar way, April 24, sustaining severe injuries to his head and chest.——Dr. Joseph R. Cornell, Sterling City, has been appointed district surgeon of the Southern Pacific system with headquarters at San Francisco.

Adopts Quarter System.—Leland Stanford Junior University School of Medicine has adopted the quarter system, to begin Oct. 1, 1917. By the adoption of this system the school has a continuous session, any three quarters constituting a college year. The quarter system has been in effect at the Rush Medical College, Chicago, since 1899.

Psychopathic Hospital Advocated.—Dr. Elmer E. Southard, Boston, addressed a number of the local profession at the St. Francis Hospital, San Francisco, recently, and in his address made a strong plea for the establishment of a psychopathic hospital to care for persons of subnormal mentality and alcoholic and drug addicts.

Medical Building Dedicated.—Physicians and dentists of the Santa Clara Valley assembled at San Jose, April 20 and 21, for joint clinical and dedication ceremonies held by the Santa Clara Medical Society and Santa Clara Valley District Dental Association at their new quarters in the Toohy Building. The program included, in addition to the dedicatory exercises, a scientific program and medical and dental clinics.

New Officers of State Society.—At the annual meeting of the Medical Society of the State of California, held in San Diego, April 17 to 19, under the presidency of Dr. George H. Kress, Los Angeles, the following officers were elected: president, Dr. John H. Barbet, San Francisco; vice presidents, Drs. William W. Richardson, Los Angeles, and Morton R. Gibbons, San Francisco; secretary-treasurer, Dr. Saxton T. Pope, San Francisco; councilor of the fifth district, Dr. J. E. Phillips, Santa Cruz, and councilors at large, Drs. George H. Kress, Los Angeles; Gayle G. Moseley, Redlands, and John C. Yates, San Diego. Del Monte was selected as the meeting place for 1918. The society adopted resolutions instructing the various component societies to make surveys of their members to ascertain how many are available to the United States government in case of war. The society also went on record as opposing the bill before the legislature favoring compulsory health insurance. It was decided to redistrict the state so as to add three councilor districts.

CONNECTICUT

Dairy Product Specialist Dies.—Herbert William Conn, Ph.D., Middletown, Conn., eminent as a bacteriologist and biologist, died, April 18. Dr. Conn was born, Jan. 10, 1859, in Fitchburg, Mass., was a graduate of Boston University, in 1881, receiving the degree of A.B. and A.M. In 1884 he became a member of the faculty of Wesleyan University, Middletown, Conn., as instructor of biology. After two years he was made assistant professor and in 1889 professor of biology. He organized the state board of health laboratory in 1905 and continued as its director until the time of his death. In 1911 he was appointed a member of the National Commission on Milk Standards, and from that time on gave freely of his time and talents to this work. For the last five years of his life he devoted himself especially to bacteriology and dairy products, including standardization of milk, in order to prevent the unnecessary infant mortality. He was one of the directors of the American Public Health Association, was president of the American Society of Bacteriologists in 1902, and was affiliated with many other scientific organizations. He was a man of sterling character, a prominent health worker and a scientist of national repute.

FLORIDA

New Hospital.—Ground has been broken for the Orange General Hospital, Orlando, and the building will be completed in October.

Warning.—A number of Florida physicians have been victimized by a young man, who gives his name as Dr. R. S. Deaver, and claims to be the son of Dr. Deaver of Philadelphia. He gives a story of being detained by the breakdown of his automobile and pays bills with forged checks, receiving the balance in cash.

GEORGIA

Hospital for Savannah.—The campaign held in Savannah last month to secure funds for the Savannah hospital brought in $40,573 at hand and pledges for large additional amounts.

Health Officers Hold Meeting.—At the annual meeting of the state, county and municipal health officers' association held in Augusta, April 17, the following officers were elected: president, Dr. Olin H. Weaver, Macon; vice president, Dr. Lorick T. Pattillo, Atlanta, and secretary-treasurer, Dr. Clarence B. Greer, Atlanta. The association by resolution endorsed universal military training.

Memorial Tablets for Macon Physicians.—The city council of Macon, at a meeting April 24, requested the members of the hospital commission to commemorate the deaths of Drs. William F. Holt and Henry McHatton, the original founders of the Macon Hospital, by placing within the walls of the hospital building tablets commemorating the deaths and achievements of these distinguished physicians.

State Association Meeting.—The sixty-eighth annual meeting of the Medical Association of Georgia was held at Augusta, April 18 to 20, under the presidency of Dr. Jarvis G. Dean, Dawson. Savannah was selected as the next place of meeting and the following officers were elected: president, Dr. Eugene E. Murphey, Augusta; vice presidents, Drs. Arthur D. Little, Thomasville, and Elmore C. Thrash, Atlanta; councilors; first district, Dr. M. J. Mooney, third district; Dr. Virgil O. Harvard, Arabia; fourth district, Dr. Henry W. Terrell, Grange; all reelected, and second district, Dr. C. Kosciusko Sharp, Arlington, to succeed Dr. Arthur D. Little, elected first vice president; delegates to the American Medical Association, Dr. Mallie A. Clark, Macon, and alternate, Dr. Allen H. Bunce, Atlanta.

INDIANA

Resolutions on the Shortage of Salvarsan.—At a meeting of the Indianapolis Medical Society, April 24, 1917, resolutions were adopted similar to those adopted by the Chicago medical and St. Louis medical societies on the subject of the shortage of salvarsan.

KANSAS

Communicable Diseases.—Dr. John J. Sippy, epidemiologist of the state board of health, reports that 13,836 cases of measles were reported in the state in 1916, and 6,162 in March, 1917.——Smallpox is reported to be prevalent at Little River.

New District Society Officers.—At the annual meeting of the Seventh Kansas District Medical Society held in Hutchinson, April 26, the following officers were elected: president,

Cornelius A. Mann, Hutchinson; vice presidents, Dr. Floyd E. Wallace, Chase, and Marion Trueheart, Sterling, and secretary-treasurer, Dr. William F. Schoor, Hutchinson.

LOUISIANA

Tuberculosis Survey.—Squads for the survey of tuberculosis in New Orleans were organized, April 24, at a meeting of the Louisiana Anti-Tuberculosis Campaign Committee. The object of this survey is to list all patients suffering from tuberculosis and to arrange for the safeguarding of those associated with these patients.

State Surgeons' Association Elects.—At the annual meeting of the Louisiana State Surgeons' Association held at Alexandria, April 17, the following officers were elected: president, Dr. James J. Robert, Baton Rouge; vice presidents, Drs. James A. White, Alexandria; Emil Regard, Mansura, and Hollie B. Wilson, Vicksburg, Miss.; secretary, Dr. Charles F. Duchen, Baton Rouge; treasurer, Dr. John Tolson, Lafayette. New Orleans was selected as the next place of meeting.

State Society Meeting.—At the thirty-eighth annual meeting of the Louisiana State Medical Society held under the presidency of Dr. William H. Seemann, New Orleans, at Alexandria, April 17 to 19, the following officers were elected: president, Dr. Clarence Pierson, Jackson; vice presidents, Drs. Charles V. Unsworth, New Orleans; Leon J. Menville, Couma; Archibald B. Nelson, Shreveport, and Edmund L. Leckert, New Orleans; secretary-treasurer, Dr. Laurence R. DeBuys, New Orleans (reelected).

MARYLAND

Outbreak of Cerebrospinal Meningitis.—An outbreak of cerebrospinal meningitis has occurred at Sparrows Point, Baltimore County. Three children suffering from the malady have been taken to the Harriet Lane Home, Johns Hopkins Hospital, and every precaution is being taken to prevent the spread of the disease. Dr. Josiah S. Bowen of Mount Washington, representing the state board of health, is cooperating with the physicians at Sparrows Point to keep a strict quarantine and prohibit the spread of the epidemic. One death has resulted so far.

Milk Pasteurization Ordinance to Be Effective.—The milk pasteurization ordinance has been favorably passed on by the Baltimore City Council and will be signed by the mayor, but will not become effective until the autumn, the committee having recommended that it take effect five months after its passage, in order to give dealers ample time in which to equip themselves with pasteurizing plants satisfactory to the commissioner of health and to comply with regulations. The premises and equipment of dairies are to be inspected before permits for the sale of milk are issued, and medical examinations are provided for employees who handle milk. Cows are to be inspected annually and all possible safeguards thrown around the sale of milk or cream for food consumption. Labels on containers will show the character of the milk and the date on which it was pasteurized or bottled.

Animals to Be Turned Over to Hospitals.—By a decision of the Board of Awards, the Society for the Prevention of Cruelty to Animals is no longer the official agent for the city in catching and disposing of stray dogs. The city solicitor, in his opinion, said that the most humane way of disposing of stray dogs would be to sell them to the Johns Hopkins or any other hospital for vivisection purposes and if necessary to have the city council amend the present ordinance, clearly and distinctly to permit of this manner of disposition. The new contractors are also obliged to dispose of stray and sick cats. Dr. William C. Gorgas, surgeon general of the U. S. Army, and Dr. Rupert Blue, surgeon general of the U. S. Public Health Service, have written the mayor explaining the necessity of the municipal authorities in cooperating with the hospitals in an effort to obtain animals for scientific research work.

Meetings.—A special meeting of the Baltimore City Medical Society was held in Osler Hall, May 4, at which time a symposium on "Health Preparedness" was held. The principal address was made by Dr. T. W. Sears, state sanitary supervisor of New York State, and was entitled, "Some Methods of Conserving the National Health." The discussion was opened by Dr. William H. Welch of Baltimore.

Another of a series of public health lectures, under the auspices of the Medical and Chirurgical Faculty of Maryland, was held in cooperation with the Laennec Society of the Johns Hopkins Hospital, April 30, in Osler Hall, Baltimore. The topic under discussion was tuberculosis in its various phases. Dr. Horace John Howk of Mount McGregor, N. Y., spoke on "The Public Health Work of a Great Life Insurance Company," and "The Social Service Side of Tuberculosis Work in New York City" formed the topic of a paper read by Dr. James Alexander Miller of New York. Dr. J. Hall Pleasants acted as chairman, and Dr. Louis V. Hamman presided.

Personal.—Dr. William F. Twigg of Cumberland and Dr. Robert A. Webb, Jr., of Louisville, Ky., who were graduated from Johns Hopkins Hospital on April 28, have left for New York to join an American unit of physicians for service "somewhere in France." The two physicians will be assigned for the present to the British forces and will have the rank of lieutenant. In the event that troops from this country are sent abroad, they are to be assigned to American camps.——Dr. Lewellys F. Barker has offered the use of his home, 1035 North Calvert Street, Baltimore, to the surgical dressing committee of the Maryland Branch of the American Red Cross. The committee will meet here daily until its permanent quarters in the biological laboratory of the Johns Hopkins University have been made ready.——Dr. James A. Nydegger, surgeon in the United States Public Health Service, has been reassigned to the port of Baltimore for four more years.——Dr. Edward V. Milholland of Baltimore has been appointed chief medical examiner of the Baltimore & Ohio Railroad to succeed Dr. Joseph F. Tearney, who has retired on account of ill health.——Dr. John W. Sanderson of Baltimore is at the Maryland General Hospital suffering from a fractured skull as the result of a fall down the stairs at his home, when he arose to answer a sick call.

MASSACHUSETTS

Tuberculosis War Victims Fund.—Mr. Richard Hale, Boston, treasurer of the French Tuberculosis War Victims Fund, acknowledges receipt of $13,537.04 for the fund.

Antituberculosis League Meeting.—At the third annual meeting of the Massachusetts Antituberculosis League held in Boston, April 11, Dr. Vincent Y. Bowditch, Boston, was elected president.

Workman's Compensation Act.—The governor has allowed to become law, without his signature, the bill permitting injured workmen in certain institutions under the provision of the Workman's Compensation Act to select their own physician for treatment.

Diphtheria at Immigrant Station.—Three positive cases of diphtheria have been discovered in the immigrant station of Long Wharf, Boston, and 238 immigrants were quarantined in the detention quarters. The disease was apparently brought by the steamer *Cretic*, recently arrived from Mediterranean ports and the Azores.

The Infantile Paralysis Fight.—The Harvard Infantile Paralysis Commission in cooperation with the state health department is proposing to raise $150,000 for the work of the commission. The hospitals of Boston are cooperating in this work and the equipment of the Harvard Medical School laboratories is offered for the preparation of serums. Dr. Robert W. Lovett, Boston, is chairman of the commission.

Personal.—Dr. Joel E. Goldthwait, Boston, delivered an address before the New York Academy of Medicine, May 2, on "The Challenge Which the Chronic Patient Presents to Our Profession."——Dr. Homer Z. Leach, Hardwick, has been appointed assistant medical examiner (coroner) for the Tenth Worcester District.——Dr. Francis H. Slack, Boston, deputy commissioner of health of the bacteriologic laboratory, has resigned to accept the position as pathologist, bacteriologist and serologist in the Sias Laboratory, Brookline, which is connected with the Brooks Hospital.——Dr. David D. Brough has been appointed deputy health commissioner of Boston, to succeed the late Dr. Thomas B. Shea.——Dr. William R. Ohler has been appointed assistant in the clinical pathologic department of the Boston City Hospital, succeeding Dr. Charles L. Overlander, who has accepted a position in Cincinnati.——Dr. Charles C. Farnham, Randolph, librarian of the Turner Public Library since 1876, has resigned.

NEBRASKA

Dr. Orr to Do Orthopedic Surgery in English War Hospitals.—Dr. H. Winnett Orr has accepted the call for orthopedic service in the war hospitals of England. He will go as a member of the group to be headed by Dr. Goldthwait of Boston.

NEW YORK

Mohansic Bills Defeated.—The three bills of Senator Wahner aimed to prevent the further construction of the Mohansic State Hospital and the State Training School for Boys at Yorktown, with the view of preventing the pollution of the Croton watershed, have been defeated. A resolution has already passed the house declaring it to be the sense of the legislature that these institutions should not be located on the watershed and providing a joint legislative committee to report to the next legislature whether the two sites were available for other state purposes or to suggest a proper disposition of them.

Psychiatrists Discuss Activities of Clinical Psychologists.—A committee of the New York Psychiatrical Society appointed, Dec. 6, 1916, to inquire into the activities of the "clinical psychologists" in relation to the diagnosis and treatment of abnormal conditions, has just rendered its report. The committee, consisting of Drs. Charles L. Dana, Adolf Meyer and Thomas W. Salmon, makes the following specific recommendations:

1. We recommend that the New York Psychiatrical Society affirm the general principle that the sick, whether in mind or body, should be cared for only by those with medical training who are authorized by the State to assume the responsibility of diagnosis and treatment.

2. We recommend that the Society express its disapproval and urge upon thoughtful psychologists and the medical profession in general an expression of disapproval of the application of psychology to responsible clinical work except when made by or under the direct supervision of physicians qualified to deal with abnormal mental conditions.

3. We recommend that the Society disapprove of psychologists (or of those who claim to be psychologists as a result of their ability to apply any set of psychological tests) undertaking to pass judgment upon the mental condition of sick, defective or otherwise abnormal persons when such findings involve questions of diagnosis, or affect the future care and career of such persons.

New York City

Personal.—Dr. Maximilian Frick, who has been doing hospital work in Germany, has returned to this country.——Dr. Alfred G. Langmann was seriously injured when a New York Hospital ambulance, in which he was bringing a patient to the hospital, was struck by an automobile and overturned.——Dr. Elmer E. Larkin of Plattsburg, N. Y., has been appointed a member of the state parole board to succeed ex-Senator William Townsend.

OKLAHOMA

Money Raised for Hospital.—In the first three days of a campaign recently inaugurated in Tulsa to raise $250,000 for a new hospital for the Sisters of the Sorrowful Mother, $125,000 was subscribed.

Northeast Physicians Hold Meeting.—The annual meeting of the Northeast Physicians' Medical Society held in the State Hospital Vinita, April 19, Dr. Frank L. Hughson, Vinita, was elected president and Dr. Ralph V. Smith, Tulsa, Okla., was reelected secretary. Tulsa was selected as the place of meeting for October.

Medical Smoker.—The members of the faculty of the University School of Medicine, Oklahoma City, and students from Norman and Oklahoma City, held a smoker in the latter place, recently, in celebration of the appropriation of $200,000 by the legislature for a state hospital. Addresses were made by Dean LeRoy Long and other members of the faculty, and by Dr. John W. Duke, Guthrie, state health commissioner.

PENNSYLVANIA

Philadelphia

Personal.—Dr. James Tyson, who has retired from practice after fifty-four years of active work, was the guest of honor at a testimonial dinner, May 11, at the Bellevue-Stratford.

Philadelphia Women of New York Endow Beds.—Word has been received by Mrs. Rudolph Blankenburg that the women of the Pennsylvania society in New York City will take $12,000 from its treasury and endow two beds in the American Field Ambulance Hospital in Paris. Following Mrs. Blankenburg's suggestion, the beds will be named for Hannah Penn and Lucretia Mott.

Montgomery Leaves Jefferson.—On May 3, Dr. Edward E. Montgomery, for twenty-five years the professor of gynecology in Jefferson Medical College, delivered his last lecture in that institution. This was carrying out his determination to retire at the end of this college year. Besides the senior class, many doctors, former pupils of Dr. Montgomery, were present and flowers were presented to him in behalf of the Class of 1917 by its president.

Hospital Roof Garden Dedicated.—Dedication exercises for the new roof garden of the Samaritan Hospital were held in the building, Broad and Ontario streets, May 3. The garden is the gift of an anonymous woman donor and was presented by Charles E. Beury and accepted by Rev. Russell H. Conwell. The roof garden was given in memory of the donor's husband. It will be used for pneumonia patients particularly. It is 40 by 80 feet square and is of brick with red tile floor. It is fireproof throughout and is partly covered. The cost was $8,000.

SOUTH CAROLINA

Bond Issue Voted.—The city of Greenville has recently voted a bond issue of $100,000, the proceeds to be applied to the increase of the capacity and equipment of the Greenville City Hospital.

State Society Meeting.—At the sixty-ninth annual meeting of the South Carolina Medical Association held in Spartanburg, April 17 to 19, under the presidency of Dr. Currans B. Earle, Greenville, the following officers were elected; president, Dr. Frank H. McLeod, Florence; vice presidents, Drs. Kenneth M. Lynch, Charleston; L. Rosa H. Gantt, Spartanburg, and Pettis G. Ellesor, Newberry; secretary-treasurer, Dr. Edgar A. Hines, Seneca (reelected). Aiken was chosen as the next place of meeting.

State Association Meeting.—The sixty-ninth annual meeting of the South Carolina Medical Association was held in Spartanburg, April 17-19, under the presidency of Curran B. Earle, Greenville. Aiken was selected as the place of meeting for 1918, and the following officers were elected: president, Dr. Frank H. McLeod, Florence; vice presidents, Dr. Kenneth M. Lynch, Charleston; L. Rosa H. Gantt, Spartanburg, and Pettis G. Ellesor, Newberry, and secretary-treasurer, Dr. Edgar A. Hines, Seneca (reelected).

TEXAS

Sanatorium Needed.—The Harris County Medical Society has presented a petition to the city council asking for the immediate establishment of a tuberculosis hospital at Shepherds Dam.

New Sanatorium.—Dr. Hubert F. Leach, Weatherford, has purchased the buildings formerly occupied by the Fairmount Seminary, and will remodel the buildings for sanatorium purposes. The name of the institution will be the Weatherford Sanatorium and the staff will consist of Drs. Hubert F. Leach, Frank M. Moose and Austin Leach.

Rural Health Bureau.—The Texas State Board of Health has established a Bureau of Rural Sanitation the activities of which will be devoted entirely to directing, supervising and assisting in the conduct of the rural health work made possible by the recent appropriation of the legislature of $70,000 which is to be supplemented by a like sum from the Rockefeller Foundation through the International Health Board. Dr. Platt W. Covington, professor of preventive medicine in the medical department of the University of Texas, has been selected by the agencies concerned as head of this bureau.

WISCONSIN

Sanatorium Opened.—The Marathon County Tuberculosis Sanatorium, Rib View, was formally opened April 18. The capacity of the institution is 42, and Dr. Webster A. Ladwig, county commissioner, is in charge.

Personal.—Dr. George B. Noyes has been appointed local surgeon for the Minneapolis, St. Paul and Sault Ste. Marie Railroad at Stone Lake.——Dr. Charles M. Gould, health officer of Superior, has resigned on account of ill health.——Dr. Thomas P. Russell, Oshkosh, celebrated his ninetieth birthday April 19.——The residence of Dr. Edward J. Purtell, Milwaukee, was damaged by fire to the extent of $500, April 10.——Dr. Oscar Lotz, Milwaukee, has been appointed to fill the unexpired vacancy on the state board of medical examiners caused by the resignation of Dr. John M. Beffel, Milwaukee.

CANADA

Canadian Physicians for Service in Orient.—Four Toronto medical officers—Captains W. G. M. Smith, H. A. Abraham; Lieutenants F. H. Boone and D. G. Finlayson—have been chosen by the militia department for special service in the

Orient. They will leave for Vancouver shortly for China, and from thence to France in charge of Chinese coolies.

Personals.—Dr. Forbes E. Godfrey, M. P. P., Mimico, Ont., has gone to British Guiana for a trip.——Dr. Charles K. P. Henry, Montreal, has returned from Atlantic City.——Lieut.-Col. Irving H. Cameron, Toronto, has been visiting in Ottawa, Ont.——Dr. D. J. Gibbe Wishart has been elected president of the Academy of Medicine, Toronto; Lieut.-Col. Alexander Primrose, vice president; Dr. Jabez H. Elliott, hon. secretary (reelected); Dr. J. Herbert McConnell, treasurer.

Department of Health Recommended.—Dr. Michael Steele, M. P., Stratford, Ont., submitted a resolution in the Canadian House of Commons last week calling for the creation of a Department of Health for the Dominion of Canada. A federal department of health would in no way conflict with the existing provincial boards of health. The Hon. Martin Burrell, under whose department is administered the work of the director-general of public health, believed the time would come when it would be necessary to coordinate all activities in regard to human health, medical research work, national health as it affects international problems as well as sanitation.

Hospital News.—One year ago the total returned disabled soldiers under the care of the Canadian Hospitals Commission totaled 1,530. On April 15, 1917, the number stood at 5,677.——There has been a reduction in Canadian wounded soldiers in England hospitals from 20,256, Oct. 20, 1916, to 14,545, March 30, 1917.——Canadian hospitals will soon have accommodation for 1,250 returned tuberculous soldiers.——The total accommodation now in sight in Canada for returned convalescent soldiers is about 8,600, without including hospitals for the insane.——A home for incurables has been established in Toronto for soldiers. It was formerly the Massey-Treble Home in Jarvis Street. Thirty patients can be accommodated, and it is the first of its kind to be established in Canada.——Nearly 600 men are working on additions to hospitals, and on the erection of new buildings with existing institutions all over Canada for the care of returned wounded solders.——The Immigration Building at Quebec is being completely remodeled into a clearing depot; it will house 1,000 men. Special accommodation has been set apart for tuberculosis cases, and cases of mental derangement.——The Immigration Building, Halifax, N. S., has been completely remodeled, and has been transformed into a clearing hospital for 450 men. The officers of a hospital ship arriving the other day stated they had never seen such excellent provision for landing wounded men.

GENERAL

American Physicians Convene at Atlantic City.—The American Physicians' Convention met in Atlantic City, N. J., last week and the following officers were elected: president, Dr. Francis H. Williams, Boston; vice president, Dr. Alexander McPherdran, Toronto; secretary, Dr. Thomas McCrae; treasurer, Dr. Joseph A. Capps, Chicago, and recording secretary, Dr. Thomas R. Boggs, Baltimore.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Luke's Hospital, New York City, $100,000 by the will of Mrs. Ellen S. James.

National Jewish Hospital for Consumptives, Denver, Colo., $10,000 by the will of Cary Wormser.

Montefiore Home, New York City, $25,000; Mt. Sinai Hospital, New York City, $5,000 by the will of Julius Robertson.

Railway Surgeons Organized.—The surgeons of the Georgia Railway, Charleston and Western Carolina Railway, Georgia, Florida Railway and Augusta, Georgia Railroad, met in Augusta, Ga., April 17, and perfected an organization, electing the following officers: president, Dr. Howard J. Williams, Macon, Ga.; vice presidents, Drs. George L. Smith, Swainsboro, Ga., and David E. McMaster, Tennille, Ga., and secretary-treasurer, Dr. Hugh R. Tison, Allendale, S. C.

Health Insurance vs. Sickness Insurance.—The Conference of State and Territorial Health Officers with the United States Public Health Service, which met, April 30, in Washington, D. C., adopted the following resolution defining its attitude in relation to health insurance and sickness insurance:

Resolved, That in the judgment of this conference the use of the phrase "health insurance" to describe a system of sickness relief that makes no specific, positive, and definite provision for the conservation of health is liable to endanger the efficiency of existing health agencies and to retard their further development.

Resolved, That in any scheme for health insurance all activities looking toward the active conservation and promotion of health should be entrusted to the regularly established health conservation agencies, which should be reorganized or reinforced for that purpose, if necessary.

Preventing Infectious Diseases.—The United States Public Health Service has issued for the benefit of the public a bulletin calling attention to the importance of preventing communicable and infectious diseases and to a number of bulletins issued free by the government designed to aid in bringing about this desirable result. Among the bulletins which may be had for the asking are the following: "Good Water for Farm Homes," Public Health Bulletin 70; "Typhoid Fever—Its Causation and Prevention," Public Health Bulletin 69; "Prevention of Malaria," Reprint 170; "The Prevention of Pellagra," Reprint 307; "Tuberculosis, Its Predisposing Causes," Supplement 3; "Hay Fever and Its Prevention," Reprint 349; "Infantile Paralysis," Reprint 350; "Malaria—Lessons on Its Cause and Prevention," Supplement 18 (for use in schools); "Fighting Trim—The Importance of Right Living," Supplement 5; "What the Farmer Can Do to Prevent Malaria," Supplement 11; "The Care of the Baby," Supplement 10.

FOREIGN

New Hospital for China.—Reports state that a new central hospital, planned by American architects, has been erected in Peking, China, at a total expense, for building and equipment, of approximately $250,000, on property costing an additional $21,000. The building is of gray brick, with red tile roof, and is strictly fireproof. It is 262 feet broad, an average of 90 feet deep and 65 feet high, consisting of three floors and basement. The cement and iron used are of Chinese manufacture. The building is equipped with all the modern surgical and bacteriologic instruments, costing over $25,000. The medical director is Dr. Wu Lien-Teh, who was educated in Cambridge, England, and who is said to have won fame by his work during the plague epidemic in Manchuria in 1911. The resident staff will be chosen from Chinese graduates of medical schools of different countries, including China. Administrators, physicians and nurses are all to be natives of China. A motor ambulance service has been established in connection.

Retirement of Penna.—Having reached the age limit, Prof. J. Penna retires from the chair of epidemic diseases at the University of Buenos Aires and from the leadership of the Public Health Service, which he may be said to have founded in Argentina. To his efforts was due the founding of the model Hospital Muñiz in 1894 destined for contagious diseases and as an aid in teaching epidemiology. Penna has also been at the head of the entire hospital system at Buenos Aires since 1906, the Asistencia Publica, as it is called. His works on smallpox, yellow fever and other epidemics published in 1884 and thereafter have long been classic, and in 1894 his studies of spider bites and since then his work in serotherapy and prophylaxis in general have given valuable results for the country and for science, especially his country-wide study of malaria and the most practical means to apply prophylactic measures. Lozano, secretary of the Public Health Service, retired with Penna, and a testimonial ceremony was arranged for the farewell gathering at which Prof. R. Kraus delivered the main address, lauding "the first and the greatest epidemiologist of Argentina, José Penna." An artistic souvenir bronze plaque was presented to each.

Deaths in the Profession Abroad.—F. F. Ulrik of Copenhagen, the oldest physician in Denmark, aged 99. He took a leading part in the movement to provide more hygienic homes for the laboring classes, and published as early as 1867 an appeal for insurance against sickness and old age. He was also a member of the legislature at one time.——**J. Kaarsberg** of Copenhagen, a prominent surgeon and gynecologist, titular professor of the University of Copenhagen, aged 51.——**L. von Muralt,** chief of the Davos Santorium for the Tuberculous, and author of numerous works on neurologic and psychiatric subjects and on tuberculosis, aged 48. His study of the nervous and mental disturbances with pulmonary tuberculosis, published in 1913, attracted much attention. He began his career as a psychiatrist but contracted pulmonary tuberculosis at the age of 25 and had this to fight the rest of his life. He kept it latent most of the time and his personal experience was an important factor in his success at Davos, which owes much to him during the nearly twelve years he spent there. The obituary notice in our Swiss exchanges states that he married in 1902 an American wife, Miss Florence Hull Watson, M.D., of Philadelphia, who survives him. A list of twenty-four of his works is given and the list of societies, etc.,

over which he often presided. The arrangements he made at Davos for the interned war prisoners were taken as a model for other institutions throughout the land.

Projects of the China Medical Board.—The first annual report of the China Medical Board of the Rockefeller Foundation (December, 1914, to December, 1915) sets forth the action of the board in aid of medical progress in China. Among the steps taken up to that time were the purchase of the property of the Union Medical College and Compound in Peking, formerly owned by the London Missionary Society, and also a number of private properties adjoining the college property for the purpose of enlarging the plant. The transfer provided that the college should be conducted by a board of trustees some of the members of which should be from the six missionary societies associated with the London Missionary Society in the conduct of the college previous to its purchase. It was decided to establish a medical school at Shanghai by merging the medical schools of St. John's University, the Pennsylvania Medical School and the Harvard Medical School, all conducted previously in association with missionary societies, and still to be conducted in cooperation with them, each to have membership in the board of trustees of the merged school. The Hunan-Yale Medical School at Changsha was granted $16,500 a year for five years. A modern hospital on a new site is being built and promises to be one of the best in China. Grants are to be made annually to a number of missionary medical schools and hospitals throughout China, beginning first with those easily accessible from the leading medical schools to be developed at Peking and in the lower Yangtze Valley. Among these are a large number of hospitals in north and central China. Among fellowships granted were fellowships for Chinese graduates in medicine, for Chinese nurses and for Chinese pharmacists, and also for a number of medical missionaries for pursuing graduate work.

LONDON LETTER

LONDON, April 16, 1917.

Child Mortality

A report on child mortality by Sir A. Newsholme, medical officer to the Local Government Board, has just been published. It deals with the years 1911-1914, and therefore may be regarded as uninfluenced by war conditions. During these four years, 575,078 deaths occurred in England and Wales under the age of 5, more than a quarter of the deaths at all ages. There is a great contrast between the mortalities of industrial towns and industrial areas in large cities and places inhabited by the better classes. Thus, in London, Shoreditch had 341 and Finsbury 216 deaths per thousand births against 112 in Hampstead. In the great towns, Burnley had 257, Wigan 254 and Middlesborough 251 against 96 in Ilford and 123 in Swindon. In discussing the causes of this excessive mortality, Sir A. Newsholme dismisses the facile explanation that it is due to ignorance among mothers of the working class. He does not consider that this exists among them to a much greater extent than in other classes of society. Moreover, breast feeding is commoner among them. He attributes the difference in mortality between the two classes to the following causes:

1. The well-to-do mother is commonly able to devote herself to her infant and have assistance in this duty; the working-class mother is single-handed, and has also to perform, unaided, all the duties of her household, including the washing and cooking for her husband and herself and possibly for several children.

2. The well-to-do mother is commonly able to make sure that the milk for her infant is purchased under the best circumstances, is stored in a satisfactory pantry, and is prepared under cleanly conditions. The working-class mother often is supplied with stale, impoverished milk, may have no pantry, and, except when suckling her infant, is handicapped at every stage in the cleanly preparation of her infant's food.

3. If the well-to-do mother is ill, adequate medical and nursing assistance is at once available, and the child's welfare can be safeguarded; if the working-class mother is ill, the child usually must suffer with its mother.

4. If the child of the well-to-do mother falls ill, everything that good nursing and medical attendance can furnish is commonly at once available; for the child of the working-class mother the state of matters is remote from this ideal. Facilities for medical attendance and nursing vary greatly in different districts. In London, in small towns and in rural districts, the nursing assistance provided by district and county nursing associations is usually more generally available than in industrial towns. Prompt medical assistance is of great importance. It is often not available for children of wage earners, and particularly for the children of unskilled workers.

5. Infants and nursing mothers are rapidly influenced by their environment. This environment is complex. The mother is the main element in the environment of the infant. If she is overworked and suffering from chronic fatigue, her infant must suffer; directly, because the mother's milk under these circumstances is liable to be impoverished or otherwise unwholesome, or indirectly, owing to insufficient attention to the infant. The infant of the well-to-do mother is less liable to suffer in either of these ways.

6. Not only are the milk supply and the storage and preparation of artificial food important parts of the environment of the infant, but also the housing conditions of the family, and the sanitary conditions of the back yard and of the street in which the house is situated.

The remedy for this relative "social helplessness" is that medical advice and nursing assistance should be made available for the poor as promptly as for others. The physician, the sanitary inspector, the health visitor and the trained midwife must all be available to give the requisite advice. Such advice is becoming available to an increasing extent.

The War

THE FOOD PROBLEM

A new order for regulating the consumption of food in hotels, restaurants, boarding houses and clubs has been issued. The attempt to restrict consumption by curtailing the number of courses served at meals has failed to achieve its purpose, and the new regulations are on entirely different lines—a system of rationing in bulk. A meatless day once a week is to be observed. In London no meat, poultry or game may be served on Tuesday. Elsewhere the meatless day will be Wednesday. Five potatoless days are to be observed. No potatoes may be served except on the weekly meatless day and on Friday. Rationing is to be on a weekly scale for each person of 4½ pounds of meat, 3½ pounds of bread, 14 ounces of flour, and ½ pounds of sugar. This scale allows 2 ounces of bread for each meal, 2 ounces of meat for breakfast, 5 ounces of meat at luncheon and 5 ounces for dinner. As the unit of calculation is the week, the caterer may, however, allocate the rations to meals as he chooses. Two ounces of poultry and game are to be reckoned as 1 ounce of meat. The weight of meat is to be the uncooked weight, including bone. The order does not apply to a boarding house in which the number of bedrooms does not exceed twelve or to a public eating place at which no meal is served, the cost of which exceeds 30 cents. By a new flour order the percentage of flour from other cereals to be mixed with wheaten flour is increased from a maximum of 15 per cent. to 25, and the minimum from 5 to 10 per cent. This is the fourth new standard for flour since the outbreak of war. The other cereals referred to are maize, barley, rice, maize semolina, oats, rye and beans. Official statistics show that the retail prices of food have increased by 94 per cent. since the war began. This calculation does not take into account the considerable economies effected by changes in dietary resulting from the increased prices. Thus such very common economies as the omission of eggs, the substitution of margarin for butter, and the reduction of the consumption of sugar and fish by one half lowers the percentage of increase to 61. It is interesting, to compare the percentages of increased prices of food elsewhere: Vienna, 171.7; Italy, 70; United States, over 24; Australia, 25.3, and New Zealand, 25.2. Attention is being directed to the many forms in which food is growing wild in the country and usually neglected. There are over 266 different wild species of the animal and vegetable kingdoms, mostly commonly distributed, easily identified and procured, as well as suitable to simple processes of cooking. Among them are the edible frog found in East Anglia, Surrey and Hampshire, seven species of seaweed, and nearly fifty esculent fungi. Such foods, of course, are available only to those who live in small towns or in the country. It is calculated that these persons should be able to supply during at least three quarters of the year two thirds of their needs from the fields, woodlands, lanes and streams in their immediate neighborhood.

THE HEALTH OF MUNITION WORKERS

Speaking at the Institute of Public Health, Sir Thomas Barlow said that it was a revelation to him how little real illness there has been among the munition workers, consider-

ing the amount of work done and the hours of labor. One reason is the excellence of the cooking and the variety of food supplied in the canteen. He did not hesitate to say that people have been fed better than ever before. (The explanation of this, notwithstanding the dearness of food, is the high wages earned.) Women have wonderful powers of endurance, especially in monotonous occupations. It is quite certain that young women do better than men and young boys in this sort of work.

PARIS LETTER

PARIS, April 12, 1917.

The War

NECESSITY OF ENTRUSTING ROENTGENOGRAPHY TO MEDICAL MEN

The Society of Medical Roentgenology of France recently held an important meeting under the presidency of Justin Godart, undersecretary of state for the military health service. At this meeting were studied successively the methods of application, the rôle and the utilization of various types of roentgenographic apparatus in the army, the Roentgen ray in the diagnosis of pulmonary tuberculosis in soldiers, Roentgen therapy of war wounds, etc. Besides these technical questions, two communications were of general interest. One article contributed by Dr. Béclère, physician of the hospitals of Paris, points out the necessity of entrusting only to physicians the direction of the roentgenographic service. While praising for their devotion the persons of all conditions and the members of all professions, who have shown themselves eager to serve as roentgenographers during the war, Béclère is of the opinion that the anatomic localization of projectiles, the roentgenoscopic diagnosis of the ostearthropathies and of the lesions of the respiratory, circulatory, digestive and urinary tracts, the application of the Roentgen ray to medicochirurgic surveys or examinations, and, finally, roentgenotherapy demand a knowledge of anatomy, physiology, pathology and chemistry which is possessed only by the physician. The direction of the roentgenographic service is beset by difficulties and dangers, and carries responsibilities which rightfully and legally belong to those in possession of medical knowledge. Therefore, it is necessary to entrust this service exclusively to competent medical men. Barret and Aubourg, on the other hand, insisted on the necessity of leaving to the roentgenologist the free choice of procedures or methods to be used in making his diagnosis. According to Barret and Aubourg, the roentgenographic examination is, too often practiced without judgment and without method. Roentgenography is overdone and roentgenoscopy is neglected, and one does not obtain from either one the results which may reasonably be expected. Which of the two procedures should be employed depends on definite indications. A correct diagnosis depends equally on the choice of method, the mode of application and the interpretation of the results. The roentgenologist should be expected not merely to produce a roentgenogram or to do a fluoroscopy, but to make a diagnosis, and to him may be left the choice of the procedures which best suit his purpose, assuming that he will duly consider the existing circumstances which impose on him economy of material and of time. It may be accepted that fluoroscopy suffices, in the majority of cases, to meet the demands of Roentgen diagnosis in war, thus permitting of a notable reduction in the number of plates used.

THE EFFECT OF ALCOHOL ON MARKSMANSHIP

A member of the army medical corps recently presented in the *Concours médical* some interesting information concerning the effect of alcohol on marksmanship. He chose the best shots from among the noncommissioned officers and soldiers of his regiment, and had them fire a series at 200 meters. They were then given a dose of brandy, approximately 50 gm., after which they fired a second series similar to the first. These experiments were repeated at different times and under different conditions with always identical results. It was found that the efficiency of the marksmen after the absorption of the alcohol had depreciated 30 per cent. in rapid firing and 50 per cent. in slow firing.

BREAD RATION FOR THE ARMY

The perpetual secretary of the Department of Agriculture has published a letter from a staff officer and correspondent of the department dealing with the consumption of bread by the troops. The men receive only 650 gm. This measure was adopted in consequence of the preference of soldiers for white bread when they can buy it in the cantonments in which bakeries are still operated. But in the trenches or the second line, when the men are at work, the ration of 650 gm. is insufficient. If sometimes one finds pieces of bread thrown away, pieces of crust especially, this can be explained by the soiling resulting from transport and baking, and by the hardness of the bread, which is consumed ten or fifteen days after it is baked by soldiers whose poor dentition is no longer looked into so carefully.

PRESENTATION OF DECORATIONS TO THE PERSONNEL OF THE CANADIAN HOSPITAL

Under the presidency of Justin Godart, undersecretary of state for the military health service, a ceremony was conducted at which decorations were given to the personnel of the Canadian hospital at Saint Cloud. In the name of the government, Godart presented the cross of the Legion of Honor to Colonel Le Bel, physician in chief of the hospital. Other decorations were presented to the Canadian personnel, the physicians and the male and female nurses who have served for more than a year in that sanitary formation.

Use of Saccharin

A special commission has been appointed by the minister of the interior, under the presidency of Professor Gariel, for the purpose of studying the question of authorizing by decree the use of saccharin in conformance with the advice of the Academy of Medicine and the Superior Council of Hygiene of France (THE JOURNAL, March 10, 1917, p. 793; March 17, 1917, p. 860). Being called on to give a medical opinion and to formulate propositions to be taken up by the Superior Council of Hygiene, the commission has proposed the following: That sugar be replaced by saccharin in the sweetening of liquors used in the manufacture of ciders, beer and effervescent wines, in manufactured sweet wines (except products destined for export), and in common liquors and pops. It proposes to authorize the suppression of the use of sugar in cafés, and by all retailers of wines, according permission for the consumer to use saccharin. It would permit the use of saccharinated glucose in the manufacture of preserves, ordinary syrups, jams and compotes. In this connection, the commission has expressed itself as favoring the manufacture of glucose, and the delivering for consumption of all the glucose which is not needed for the manufacture of alcohol destined for the powder works. It has further recommended that the use of the available supply of glucose in the manufacture of alcoholic drinks be not authorized. The commission has rejected the use of saccharin in the manufacture of preserves, jams, compotes, syrups, confectionery, pastry, chocolate and condensed milk. It has declared that if the sugar supply fails it would be better to deny to these industries the distribution of their goods rather than to permit the free use of a suspected product in order to keep up the consumption of commodities which are unfit for food purposes. The commission has rejected the use of saccharin for pharmaceutic products. It proposes that pharmacists be authorized to manufacture sugar syrups, but that they be supervised, to the end that they may not be able to deliver to the public confectioner syrups, but manufacture only medicinal syrups. The opinion was expressed that the public must be informed that the products containing saccharin must not be given to children, and that the sick and the aged must also abstain from their use.

Closing of the Absinth Dispensaries

In response to a question asked of the minister of finance, he has given some interesting details on the number of establishments closed by the enforcement of the law which prohibits the manufacture, circulation and sale of absinth. The number of establishments in France which have been ordered closed for selling absinth is 485 (464 retail and 21 wholesale). These dispensaries were distributed as follows: 108 in the department of Gard, 98 in Bouches-du-Rhône, 40 in Vaucluse, 32 in Hérault, 29 in Var, 17 in Loire, 16 in Rhône, and 11 in Doubs, in Drôme and in Isère; 134 were divided among 46 departments, in which the closures numbered from one to nine.

Death of Prof. A. Combe

We record the death of Prof. A. Combe of Lausanne, at the age of 58. He was for many years connected with the University of Lausanne in the department of pediatrics. He had become well known through his works on intestinal autointoxication and the treatment of enteritis.

Association News

THE NEW YORK SESSION

A Patriotic General Meeting

The Local Committee on Arrangements reports that because of the war, the committee contemplates substituting a patriotic general meeting for the formal reception which has usually been given in honor of the President of the Association and which this year would have been held on Thursday evening of the week of the annual session.

While the plans are not yet fully matured, it is the purpose of the committee to have for this meeting speakers of national and international reputation, who are familiar with the issues of the day. The meeting will be held in a large hall and reservations to accommodate the Fellows and their guests will be made, then the remaining space will be at the disposal of the public. It is probable that ex-President Theodore Roosevelt and Mr. Joseph H. Choate, late ambassador to Great Britain, will be among the speakers.

The American Medical Golfing Association

Plans for the 1917 tournament of the Association are under way. The Garden City Golf Club has extended the courtesy of its course subject to the payment of a greens fee of $2 for each player. Play will be in foursomes arranged by the Fellows themselves, starting on prearranged schedule at five minute intervals from 8:30 for morning play and 1 o'clock for afternoon play. Luncheon will be served from 12 to 2 at the Garden City Hotel adjoining. The annual golf dinner and meeting will be held in the evening.

To be fair to all, an early announcement of the plan of entries is now made. The events will be patterned after those of last year, and section captains are expected to get out their respective teams. All foursomes will start from the first tee, where entry cards will be accepted. All entries will be made in the order received, but time for play cannot be assigned until three Fellows of a foursome are entered. Entries will close when the capacity of the course is reached (thirty-five foursomes). In any event they will close in the Chicago office, May 20, and will then be forwarded to New York. Entry blank, covering the needed data, will be mailed on request. Full program of events will be forthcoming duly. Members of the Golfing Association are requested to urge their confrères to send in their two dollar enrolment fees that a strong list may be presented to the local committee at New York.

Address all communications to the secretary, 1414 Chicago Avenue, Evanston, Ill.

THOMAS HUBBARD, President.
WILL WALTER, Secretary-Treasurer.

Missouri Valley and Southwest Special

The Missouri Valley and Southwest special, as announced last week, will leave Kansas City, Saturday evening, June 2, at 8 o'clock, via the Santa Fé Railroad, and arrive at Chicago 9 a. m. Sunday. It will leave Chicago 10 a. m. Sunday, arriving in New York via the Pennsylvania line at 2:20 p. m. Monday. There will be no change of cars and no extra fare on this train. For service address Dr. Fred. H. Clark, El Reno, Okla.; Dr. Charles Wood Fassett, Lathrop Building, Kansas City, Mo., or the nearest Santa Fé agent.

Southeastern Passenger Association Rates

Those residing in territory covered by the Southeastern Passenger Association who expect to attend the New York session are referred to the thirty day summer excursion fares, sixty day variable route summer excursion fares and season limit summer excursion fares which will be in effect from the Southeast to New York. The thirty day summer excursion tickets are on sale daily from June 1 to September 30, inclusive. The sixty day variable route summer excursion tickets are on sale May 22 to October 15, inclusive, bearing limit of sixty days. The season limit summer excursion tickets are on sale from May 15 to October 15, inclusive, which tickets bear limit of October 31.

Banquet for Women Physicians

The Women's Medical Association of New York is planning a banquet to be given at the Hotel McAlpin, Wednesday evening, June 6, 1917, for the women physicians who will be in New York to attend the meetings of the American Medical Association. Tickets, $3, may be obtained from Dr. Mathilda K. Wallin, 616 Madison Avenue, New York.

NEW YORK CLINICAL SESSIONS

(*Continued from page 1378*)

ADMISSION TICKETS to the Clinics, Demonstrations and Exhibits incorporated in the Clinical Sessions program will be issued *only* to members and guests who register and make application at the American Medical Association Headquarters.

GUESTS other than physicians and dentists will not be admitted to the Medical and Surgical clinics.

SPECIAL BADGES and BUTTONS will be issued to guests (other than physicians and dentists) of the Clinical Sessions and of the American Medical Association who wish to attend the demonstrations, moving pictures and exhibits or inspect the different nursing, medical, municipal and public health institutions arranged for in the program by the Committee on Preventive Medicine and Public Health and the Committees on Allied Topics, including Trained Nursing and Training Schools, District Nursing System, Hospital Social Service, and Planning and Financing of Municipal and Non-Municipal Hospitals.

FELLOWS OF THE AMERICAN MEDICAL ASSOCIATION may apply in advance by mail for tickets of admission to the Clinical Sessions. In writing for the three sessions (Monday afternoon, Tuesday morning and Tuesday afternoon) give first, second and third choice, as seating capacity of amphitheaters is limited. Tickets of admission will be delivered after registration at the American Medical Association Headquarters.

GENERAL CLINICAL SESSIONS COMMITTEE[1]

Wendell C. Phillips, Chairman
Samuel G. Gant, Sec. — **D. Campbell, Asst. Sec.**
Alexander Lambert — **Floyd M. Crandall**

PHARMACOLOGY AND THERAPEUTICS

FRANK S. MEARA, Chairman — MALCOLM GOODRIDGE, Secretary
PHILIP EICHLER — CHARLES C. LIEB
ROBERT A. HATCHER — GEORGE B. WALLACE

TUESDAY MORNING, JUNE 5

BELLEVUE HOSPITAL, Sage Institute of Pathology—11. Demonstration of respiration calorimeter, Dr. Eugene F. Du Bois.

LOOMIS LABORATORY—10. Demonstration: action of certain drugs on normal and abnormal circulation in animals, Drs. George B. Wallace, R. A. Hatcher, Cary Eggleston.

TUESDAY AFTERNOON, JUNE 5

COLLEGE OF PHYSICIANS AND SURGEONS—3. Laboratory of Pharmacology; Demonstration: pharmacologic action of pituitary extract, Dr. Charles C. Lieb.

PATHOLOGY AND PHYSIOLOGY

A. CLINICAL AND MEDICOLEGAL

OTTO H. SCHULTZE, Chairman — FRED S. MANDLEBAUM
CHARLES NORRIS — ALWIN M. PAPPENHEIMER

MONDAY AND TUESDAY MORNINGS, JUNE 4 AND 5

CORNELL UNIVERSITY MEDICAL COLLEGE—10. Necropsies at mortuary; demonstration of medicolegal specimens illustrating intracranial injury, strangulation and abortion; pathologic department, Dr. Otto H. Schultze.

MONDAY AND TUESDAY AFTERNOONS, JUNE 4 AND 5

CORNELL UNIVERSITY MEDICAL COLLEGE—2. See program, Cornell University Medical College, 10 a. m., Monday and Tuesday.

B. LABORATORY (DIAGNOSTIC)

FREDERIC E. SONDERN, Chairman — O. S. HILLMAN, Secretary
JOSEPH R. LOSEE — REUBEN OTTENBERG
WARD J. MACNEAL — WILLIAM H. PARK

1. The complete program will be available in due season, and will be mailed to those who request it, sending to the committee a stamped addressed envelope.

MONDAY AFTERNOON, JUNE 4

BELLEVUE HOSPITAL—2. Necropsy findings, female breast, Drs. J. N. Worcester, B. Morgan Vance; aspects of pathology and histology of visceral syphilis, Dr. Douglas Symmers; carcinoids of small intestine, Dr. B. Morgan Vance; primary and secondary neoplasms of bony system, Dr. Douglas Symmers; laboratory specimens, pathologic staff. Demonstration: surgical pathologic specimens, genito-urinary tract, Dr. Oswald F. Lowsley.

BETH ISRAEL HOSPITAL—3. Pathology splenic anemia and polycythemia; specimens illustrating general pathology; microscopic pathology of appendicitis, Dr. E. Moschcowitz.

FORDHAM UNIVERSITY MEDICAL SCHOOL—2. Gross and microscopic pathologic specimens, Drs. L. Heitzmann, G. Fried; interesting pathologic charts, Drs. L. Heitzmann, G. Fried.

GERMAN HOSPITAL, N. Y.—3. Selection donors for transfusion by blood tests, Dr. A. L. Garbat.

HAHNEMANN HOSPITAL—2. Laboratory methods, Drs. D. S. D. Jessup, G. P. Olcott.

KINGS COUNTY HOSPITAL (Brooklyn Laboratories of Pathology)—3. Standardizing reading of Wassermann reactions; instrument whereby physician, while operating, can dictate to stenographer in another room, Dr. B. T. Terry.

LYING-IN HOSPITAL—2. Museum specimens; lantern slide demonstration of laboratory findings in pregnancy and labor complications; chemistry of blood and urine in pregnancy, Dr. J. R. Losee.

MANHATTAN EYE, EAR AND THROAT HOSPITAL—2. Wassermann and other serum reactions; blood plates from cultures; fruit and flower allergy sensitization with various fruits, pollens, etc., with reactions on sensitized patients; pathologic specimens of eye, ear and throat, Dr. J. G. Dwyer.

MONTEFIORE HOME AND HOSPITAL—2. Demonstration hospital metabolism ward, Dr. N. W. Janney; pathologic specimens chronic disease, Dr. B. S. Kline; demonstration unusual Roentgen-ray findings, Dr. Thomas Scholz.

MOUNT SINAI HOSPITAL—2. Methods diagnosing stomach, liver and pancreatic diseases, Dr. B. B. Crohn; morphology normal and pathologic blood cells, Dr. N. Rosenthal. 3. Blood-sugar analysis and its clinical applications; chemical pathology in nephritis, Dr. A. A. Epstein; transfusion tests, Dr. R. Ottenberg. 2. Cholesterin in cholelithiasis, Drs. M. A. Rothschild, A. O. Wilensky. 4. Microchemical methods for clinician, Dr. T. Kuttner; methods studying functions of the stomach with reference to surgical procedures, Drs. A. O. Wilensky, B. B. Crohn.

NEW YORK CITY HEALTH DEPARTMENT (Bureau of Laboratories), 149 Center Street—2. Diagnostic examinations: diphtheria, tuberculosis, malaria, typhoid, syphilis and gonorrhea; microbial milk examinations for city milk control, Dr. Hatfield.

NEW YORK EYE AND EAR INFIRMARY—4. Pathologic eye specimens, Dr. George S. Dixon.

NEW YORK HOSPITAL—2. Use of a mechanically sterilized room in bacteriologic technic; making postmortem blood cultures; intravenous injections of rabbits by special animal holder and transillumination, Dr. W. J. Elser; use sugar-containing mediums for differentiation gram-negative cocci and members diphtheria organisms; isolation typhoid and paratyphoid bacilli from stools, and their differentiation; use centrifuge for clarification agar and other mediums; handling ascitic fluid aseptically, Dr. G. W. Wheeler; identification different types pneumococcus infection, bacteriologically and by examining urine, Dr. Larsen; diagnosis hypersensitiveness to foreign proteins, Dr. Coca and Cooke; Wassermann reaction technic, Drs. J. M. Kent and W. H. Baughman; clinical significance Wassermann reaction, Dr. A. F. Coca; apparatus, care of stool specimens and their disinfection, Dr. R. G. Stillman; methods used in blood chemistry: sugar, carbon dioxid capacity of plasma, total nonprotein nitrogen, urea, uric acid, creatinin, Dr. R. G. Stillman; isolation vitamins from lamb's pancreas; cage for rats used in metabolism studies, Dr. Walter E. Eddy.

PRESBYTERIAN HOSPITAL—2. Method determining type of pneumococcus, Miss M. P. Ohmstead.

ROOSEVELT HOSPITAL—2. Hexamethylenamin kidney-function test as compared with others; methods blood analysis, nephritic test meal, etc., Dr. W. G. Lyle.

ST. MARY HOSPITAL, Brooklyn—2. Gross microscopic pathology, Dr. W. Moiterer.

SKIN AND CANCER HOSPITAL—2. Skin tumors; cultures pathogenic fungi; laboratory methods, Dr. D. S. D. Jessup.

VANDERBILT CLINIC (Outpatient Department)—2. Diagnosis and treatment diabetic patients, Drs. Geyelin and H. Wiener.

TUESDAY MORNING, JUNE 5

BELLEVUE HOSPITAL—10. Certain aspects of pathology and histology visceral syphilis, Dr. Douglas Symmers; laboratory specimens, Pathologic staff of hospital; primary and secondary neoplasms of bony system, Dr. Douglas Symmers.

COLLEGE OF PHYSICIANS AND SURGEONS—9. Grouping typhoid and paratyphoid organisms, Dr. Weiss; complement fixation acid-fast group, including lepra bacilli, Dr. Cook; complement fixation in tuberculosis, Dr. H. R. Miller; rabbit syphilis, Dr. McBurney; specific leukocytosis, Dr. Tsen; Wassermann reaction technic, Dr. Reuben Ottenberg; bacterial anaphylaxis, Dr. Hans Zinsser; clinical diagnosis, Dr. W. T. Gies and assistants. 10. Museum of Anatomy, Dr. George S. Huntington and assistants.

HAHNEMANN HOSPITAL—10. See program, Hahnemann Hospital, 2 p. m., Monday.

LYING-IN HOSPITAL—10:30. See program, Lying-In Hospital, 2 p. m., Monday.

MANHATTAN EYE, EAR AND THROAT HOSPITAL—10. See program, Manhattan Eye, Ear and Throat Hospital, 2 p. m., Monday.

NEW YORK CITY HEALTH DEPARTMENT (Bureau of Laboratories), Foot of East 16th Street—9:30. Relation microbes to dairy scores; microbal control, laundries, Dr. Schroeder. 10:10. Antitoxins, Dr. Banzhaf; serums and bacterial vaccines; fecal examinations in typhoid and related fevers, Dr. Charles Krumwiede. 11:20. Diphtheria control, Dr. W. H. Park. 11:40. Schick reaction, Dr. Abraham Zingher. 12. Pneumonia diagnosis and treatment, Dr. Charles Krumwiede.

SKIN AND CANCER HOSPITAL—11. See program, Skin and Cancer Hospital, 2 p. m., Monday.

TUESDAY AFTERNOON, JUNE 5

BELLEVUE HOSPITAL—2. See program, Bellevue Hospital for 2 o'clock, Monday afternoon.

BETH ISRAEL HOSPITAL—3. See program, Beth Israel Hospital, 3 p. m., Monday.

CITY HOSPITAL (Strecker Memorial Laboratory), Blackwell's Island—1. Colloidal gold reaction in paresis and tabes, and allied neuropathologic conditions; exhibition brain and spinal cord specimens, Drs. J. H. Larkin, I. J. Levy, L. H. Cornwall, R. S. Nelson.

CLINICAL LABORATORY, 20 West 55th Street—2. Laboratory methods, Drs. F. E. Sondern, O. S. Hillman.

CORNELL MEDICAL COLLEGE—2:30. Complement fixation in gonorrhea, Dr. H. J. Schwartz. 3. Complement fixation in chronic arthritis, Dr. Thomas W. Hastings. 4. Colloidal gold test spinal fluids, Dr. John Richards. 4:30. Bacteriology, abscesses of teeth and arthritis, Dr. William C. Thro.

GERMAN HOSPITAL, New York—3. See program, German Hospital, 3 p. m., Monday.

HOAGLAND LABORATORY, 335 Henry Street, Brooklyn—1. Museum specimens, Dr. Archibald Murray.

KINGS COUNTY HOSPITAL—3. See program, Kings County Hospital, 3 p. m., Monday.

LINCOLN HOSPITAL—2:30. Wassermann test, Dr. L. H. Berliner; methods blood analysis, Dr. Z. Sagal.

LONG ISLAND COLLEGE HOSPITAL—2. Complement fixation, tuberculosis, Dr. R. A. Davison; methods determining blood urea, uric acid, creatin and cholesterin with clinical data and interpretation, Dr. H. M. Feinblatt. 3. Clinical laboratory for students in teaching hospital; ward and dispensary teaching of medicine, Dr. L. F. Warren.

MANHATTAN EYE, EAR AND THROAT HOSPITAL—2. See program, Manhattan Eye, Ear and Throat Hospital, 2 p. m., Monday.

MONTEFIORE HOME AND HOSPITAL—4. Gross and microscopic pathologic material, Dr. B. S. Kline.

MOUNT SINAI HOSPITAL—2, 3, 4. See program, Mount Sinai Hospital, 2, 3, 4, Monday afternoon.

NEUROLOGICAL INSTITUTE—4. Serology, nerve and mental diseases: tests showing type reactions in paresis, tabes and cerebrospinal syphilis, Dr. D. M. Kaplan.

NEW YORK CITY HEALTH DEPARTMENT (Bureau of Laboratories), Foot East 16th Street—2. Diagnosis, rabies, Dr. Williams; rabies vaccine, Dr. Abramson; smallpox vaccine, Dr. Anthony. 3. Meningitis, diagnosis and treatment, Dr. J. B. Neal; etiology, poliomyelitis, Dr. A. W. Williams. 3:45. Poliomyelitis, diagnosis and treatment, Dr. J. B. Neal; control of oysters and water, Miss Noble. Laboratory open.

NEW YORK EYE AND EAR INFIRMARY—4. See program, New York Eye and Ear Infirmary, 4 p. m., Monday.

LYING-IN HOSPITAL—2:30. See program, Lying-In Hospital, 2 p. m., Monday.

POST-GRADUATE HOSPITAL—1:30. System, receiving and checking specimens and recording and filing laboratory reports, Dr. W. J. MacNeal; isolating typhoid bacilli from feces, Dr. W. L. Aycock; methods, collecting blood, Dr. R. M. Taylor. 2:30. Preparing colloidal gold solution, its use in testing cerebrospinal fluids, Dr. J. Wheeler Smith, Jr.; human intestinal protozoa and worms, Dr. A. N. Tasker, Captain Medical Corps, U. S. Army; chemical blood analysis: creatinin, V. C. Myers, Ph.D.; chemical blood analysis: blood sugar, Dr. C. V. Bailey. 3:30. Chemical blood analysis: blood diastase, J. A. Killian, Ph.D.; chemical blood analysis: uric acid, Dr. C. K. Watamabe; chemical blood analysis: cholesterol, Dr. A. J. P. Pacini; chemical blood analysis: urea, V. C. Myers, Ph.D.; chemical blood analysis: carbon dioxid combining power, J. A. Killian, Ph.D.

SKIN AND CANCER HOSPITAL—2. See program, Skin and Cancer Hospital, 2 p. m., Monday.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH—66th Street and Avenue A—2. Estimating alkaline reserve by the plasma carbon dioxid method and Fridericia's Alveolar carbon dioxid method, Dr. Edgar Stillman; determination of oxygen content of blood; lowered venous oxygen as a measure of cardiac insufficiency, Dr. Christian Lundsgaard; rapid accurate method, estimating hemoglobin, Dr. W. W. Palmer; determination of acetone and beta-hydroxybutyric acid in blood and urine, Dr. R. Fitz; determination of urea in blood and urine by urease method, Dr. G. E. Cullen; determination of chlorids in blood, Drs. Franklin McLean, D. D. Van Slyke; rapid method donors for transfusion, Dr. Peyton Rous; methods for isolating and identifying types pneumococcus lobar pneumonia, Drs. C. T. Avery, A. M. Chesney; technic electrocardiography, Dr. R. A. Morison.

ROOSEVELT HOSPITAL—2. See program, Roosevelt Hospital, 2 p. m., Monday.

ST. LUKE'S HOSPITAL—2. Serologic technic, Dr. L. W. Famulener; methods chemical pathology, O. I. Lee.

WOMAN'S HOSPITAL—2. Gynecologic pathology, Dr. Lawrence W. Strong.

C. CANCER RESEARCH

FRANCIS C. WOOD, Chairman — JAMES EWING
WILLIAM H. WOGLOM, Secretary — W. G. MACCALLUM

MONDAY AFTERNOON, JUNE 4

CROCKER LABORATORY, 1145 Amsterdam Avenue—2. Demonstration laboratory methods, cancer research, Drs. W. H. Woglom, Frederick Prime and H. N. Stevenson.

TUESDAY AFTERNOON, JUNE 5

MONTEFIORE HOME AND HOSPITAL—2. Demonstration: research in tumors of animals and plants; radium and Roentgen therapy in cancer; institutional care, advanced inoperable carcinoma (cases).

PEDIATRICS

ROWLAND G. FREEMAN, Chairman — ROYAL S. HAYNES, Secretary
HENRY DWIGHT CHAPIN — L. EMMETT HOLT
ABRAHAM LINCOLN GOODMAN — NATHANIEL R. NORTON
ALFRED F. HESS — GODFREY R. PISEK
OSCAR M. SCHLOSS

MONDAY MORNING, JUNE 4

NEW YORK POLYCLINIC HOSPITAL—10. Clinic, Dr. Henry Heiman.

MONDAY AFTERNOON, JUNE 4

BABIES' HOSPITAL—2. Ward demonstrations and methods intensive research, Dr. W. R. Norton.

BELLEVUE HOSPITAL—2. Survey work, cardiac clinic, Huddleston Foundation, Dr. A. H. Bingham. 4. Meningitis, prematurity, cardiac decompensation, Dr. L. E. LaFetra and Dr. H. B. Wilcox. 3:30 and 5:30. Application recent advances in clinical pathology, Dr. Oscar M. Schloss.

GERMAN HOSPITAL—2. Interesting ward cases: chorea, autoserum therapy; unit system of hospital construction, Drs. Abraham Jacobi and Abraham L. Goodman.

LONG ISLAND COLLEGE HOSPITAL, Brooklyn—4. Demonstration solarium and methods of treating joint tuberculosis affections, Dr. E. H. Bartley.

MOUNT SINAI HOSPITAL—4. Bedside cases (children) in Wards Y and Z, Dr. Henry Koplik.

POST-GRADUATE HOSPITAL—2. Diagnosis and treatment, cardiac cases, Dr. Henry Dwight Chapin; Demonstration: ward cases, Drs. G. R. Pisek and N. C. Pease. 4. Demonstration children's heart class, electrocardiograph in children, Dr. Robert H. Halsey.

ROOSEVELT HOSPITAL—4. Cases, roof treatment, Drs. Rowland G. Freeman and Philip Van Ingen.

ST. CHRISTOPHER'S HOSPITAL, Brooklyn—2. Survey children's hospital, Dr. W. A. Northridge.

WILLIARD PARKER HOSPITAL—2. Cases exanthems, Dr. Louis Fischer. 4. Diphtheria, cases and direct method, larynx intubation, Drs. Eli Long and Henry L. Lynch.

TUESDAY MORNING, JUNE 5

BABIES' HOSPITAL—10. Ward cases and methods intensive research, Dr. Frederick H. Bartlett.

CHILDREN'S HOME BUREAU, 327 Schermerhorn Street, Brooklyn—9:30. Exhibition: methods, caring for and placing dependent children in homes, Dr. Garlick and Mr. John Daniels.

HEBREW INFANT ASYLUM, Kingsbridge Road—10. Infantile scurvy; rickets; duodenal tube passage; survey of cubicle ward, Dr. A. F. Hess.

MOUNT SINAI HOSPITAL—10. Clinic, Wards Y and Z, children's pavilion, Dr. Herman Schwartz.

NURSERY AND CHILD'S HOSPITAL—10. Roof pavilion; modern reception ward; methods of diagnosis; studies in rickets and tetany, Drs. Freeman, R. S. Haynes and J. F. Sammis. 11:30. Examination, methods boarding-out department, Dr. R. S. Haynes and Miss Katherine Holmes.

POLYCLINIC HOSPITAL—10. Clinic, Dr. Charles Gilmore Kerley.

POST-GRADUATE HOSPITAL—10. Amphitheater A, phases infant feeding; cases, Drs. A. Caillé and R. H. Dennett.

ST LUKE'S HOSPITAL—10. Cases in active children's ward; modern reception ward; survey work children's cardiac clinic, Drs. C. F. Collins, W. P. St. Lawrence.

WILLARD PARKER HOSPITAL—10. Schick reaction and results of toxic-antitoxic injections, Drs. W. H. Park, A. Zingher.

TUESDAY AFTERNOON, JUNE 5

BABIES' HOSPITAL—2. Clinic, Dr. L. Emmett Holt.

BELLEVUE HOSPITAL—2. Work in malnutrition clinic; nutrition problems, older children, Dr. C. H. Smith. 4:30. Meningitis, prematurity, cardiac decompensation, Drs. L. E. LaFetra, H. B. Wilcox, 3:30 and 5:30. Application recent advances in clinical pathology, Dr. Oscar M. Schloss.

CITY HOSPITAL, Blackwell's Island—2. Cardiac and nutritional cases, Dr. Walter Lester Carr.

DEPARTMENT OF HEALTH, 149 Centre Street—1:30. Work of Bureau of Child Welfare, Dr. S. Josephine Baker and staff; group-system care dependent children vs. institutional care, Dr. Henry Dwight Chapin.

HEALTH DEPARTMENT, Station at 421 East 74th Street—2. Methods, conducting milk stations, Dr. Jacob Sobel.

MOUNT SINAI HOSPITAL—2. Demonstrations Wards Y and Z, Children's Pavilion, Dr. Henry Heiman.

NEW YORK AMERICAN BABY HOSPITAL, Brooklyn — 2. After-care, poliomyelitis, Dr. L. C. Ager.

NEW YORK FOUNDLING HOSPITAL—4. Care of foundlings, Dr. Joseph O'Dwyer.

NEW YORK HOSPITAL—4. Results in feeding vitamins for marasmus, Dr. Joseph C. Roper.

PRESBYTERIAN HOSPITAL—4. Roentgen-ray studies, pneumonia in children, Drs. William P. Northrup, Howard H. Mason.

ST. JOHN'S GUILD SEASIDE HOSPITAL, Staten Island — 2. Methods: operating seaside hospital, Dr. David Bovaird, Jr. Visitors will be transported from St. John's Guild to Sea View Hospital (for tuberculous).

ST. MARY'S FREE HOSPITAL FOR CHILDREN—4. Clinic, Dr. Dever S. Byard.

WILLARD PARKER HOSPITAL — 2. Exanthems, cases, Dr. Henry W. Berg. 4. Diphtheria, cases and direct method of intubation, Drs. Eli Long and Henry L. Lynah.

DERMATOLOGY

HOWARD FOX, Chairman — WALTER J. HEIMANN, Secretary
JOHN A. FORDYCE — BOLESLAW LAPOWSKI
JAMES C. JOHNSTON — WILLIAM B. TRIMBLE
JEROME KINGSBURY — HENRY H. WHITEHOUSE
JAMES McF. WINFIELD

Centralized clinics will be held at the New York Academy of Medicine by dermatologic representatives of the medical schools, hospitals and institutions of Greater New York, instead of individual clinics.

MONDAY AFTERNOON, JUNE 4

NEW YORK ACADEMY OF MEDICINE—2. General dermatologic clinic (from 100 to 150 rare cases).

TUESDAY MORNING, JUNE 5

NEW YORK ACADEMY OF MEDICINE—10:30. Leprosy clinic (from fifteen to twenty-five lepers).

TUESDAY AFTERNOON, JUNE 5

NEW YORK ACADEMY OF MEDICINE—2. General dermatologic clinic (from 100 to 150 rare cases).

NEUROLOGY

EDWARD D. FISHER, Chairman — ISADOR ABRAHAMSON, Secretary
WILLIAM BROWNING — BERNARD SACHS
FOSTER KENNEDY — M. ALLEN STARR
JOHN J. McPHEE — WILLIAM STEINACH
FREDERICK TILNEY

MONDAY MORNING, JUNE 4

MONTEFIORE HOME AND HOSPITAL—9. Cases illustrating pituitary diseases, Dr. H. Climenke; cases dystonia musculorum, Dr. Moses Keschner; reeducational exercises in tabes dorsalis, Dr. Morris Grossman.

MONDAY AFTERNOON, JUNE 4

BELLEVUE HOSPITAL—2. Neurologic clinic, Bellevue Hospital wards, Dr. Edward D. Fisher.

CITY HOSPITAL, boat from foot East 53d Street half-hourly—3. Clinic: organic nervous conditions, Dr. William Steinach.

MONTEFIORE HOME AND HOSPITAL, conveyance from Academy of Medicine to the Home and return—2. Globus pallidus syndrome—cases, Dr. J. Ramsey Hunt; moving pictures in the study of nervous diseases; neoplasms of brain: cases; pathologic specimens, Dr. S. P. Goodheart; neurologic conditions associated with polyarthritis; pathology and treatment polyarthritis, Drs. S. P. Goodhart, I. Strauss; cases showing varieties of tremor; myopathies, Dr. Isador Abrahamson.

NEUROLOGICAL INSTITUTE—2. Neurologic surgery, Drs. C. A. Elsberg, Alfred S. Taylor.

POLYCLINIC HOSPITAL—2. Operations: cases cerebral spastic paralysis, hydrocephalus, Dr. William Sharpe.

POST-GRADUATE HOSPITAL—2. Treatment paresis by intraventricular injection salvarsan and mercury; cases, Dr. Graeme Hammond.

TUESDAY MORNING, JUNE 5

CENTRAL AND NEUROLOGICAL HOSPITAL, Blackwell's Island; boats from foot of East 70th Street every half hour—9. Psychic symptoms superimposed on organic nervous disease; cases, Dr. J. J. Walsh; thalmic syndrome; cases; paraplegic tumors spinal cord; cases, Dr. Joseph Byrne; brain tumors; cases illustrating tremors, Dr. Isador Abrahamson; cases illustrating types sensory disorders; cases illustrating pituitary diseases, Dr. Hyman Climenke; laminectomy operations, Dr. Harold Neuhof.

POST-GRADUATE HOSPITAL—9. Psychologic mechanism hysteria; cases, Dr. E. S. Jelliffe.

TUESDAY AFTERNOON, JUNE 5

BELLEVUE HOSPITAL—2. Methods and cases in addiction and alcoholic wards, Dr. Charles A. Dana.

CITY HOSPITAL—2. Clinic, Dr. E. L. Hunt.

FORDHAM HOSPITAL—2. Brachial palsy, Dr. Alfred S. Taylor.

KINGS COUNTY HOSPITAL—3. Clinic, Dr. William Browning.

MOUNT SINAI HOSPITAL—2. Operative clinic, Dr. C. A. Elsberg. 3. Clinic, Dr. Bernard Sachs.

NEUROLOGICAL INSTITUTE—2. Neurologic surgery, Drs. Alfred S. Taylor, C. A. Elsberg.

POST-GRADUATE HOSPITAL—2. Teaching nervous diseases; cases, Dr. J. J. McPhee.

VANDERBILT CLINIC—2. Clinic, Drs. M. Allen Starr, Frederick Tilney.

MENTAL DISEASES

CARLOS F. MacDONALD, Chairman — GEORGE H. KIRBY, Secretary
WILLIAM MABON — WILLIAM L. RUSSELL
MENAS S. GREGORY — THOMAS W. SALMON
MAX G. SCHLAPP

MONDAY AFTERNOON, JUNE 4

BELLEVUE HOSPITAL—3. Psychopathic and alcoholic divisions; psychiatric, drug and alcoholic cases, Dr. M. S. Gregory.

MANHATTAN STATE HOSPITAL, Ward's Island (boat leaves East 116th Street every half hour)—3. Demonstration—pathologic laboratory—cerebral arteriosclerosis, brain tumors, Alzheimer's disease, pellagra, Dr. C. O. Cheney.

NEW YORK CITY CHILDREN'S HOSPITAL, Randall's Island (boat leaves East 125th Street every half hour)—2. Psychiatric and neurologic clinic, Drs. L. Pierce Clark, Walter Timme and John T. MacCurdy.

TUESDAY MORNING, JUNE 5

MANHATTAN STATE HOSPITAL, Ward's Island (boat leaves East 116th Street every half hour)—10:30. Staff conference and clinic, Dr. George H. Kirby.

POST-GRADUATE HOSPITAL—10. Clearing house for mental defectives; clinic, Dr. Max Schlapp.

SING SING PRISON, Ossining, N. Y.—10. Psychiatric clinic, Dr. Bernard Glueck.

TUESDAY AFTERNOON, JUNE 5

BLOOMINGDALE HOSPITAL, White Plains (via Grand Central Station)—2. Occupational and other therapeutic activities, Dr. William L. Russell.

NEUROLOGICAL INSTITUTE—5. Psychiatric clinic, Dr. Joseph Collins.

NEW YORK CITY CHILDREN'S HOSPITAL, Randall's Island (boat leaves East 125th Street every half hour)—2. Feeblemindedness, Dr. W. B. Cornell; institutional methods of examination, classification and obtaining services of specialists; tests for mental care.

(To be continued next week)

Marriages

JOHN R. LILLIENDAHL, M.D., Shippan Point, Stamford, Conn., to Miss Mabel Hume Andrews, at Noroton, Conn., April 19.

P. A. SURG. ROBERT FRANCIS JONES, U. S. Navy, to Miss Ann Elizabeth Penniman, in Savannah, Ga., April 24.

ANTHONY F. DEGRAFFENRIED, M.D., Bayside, L. I., N.Y., to Miss Amanda Butt of Adairville, Ky., April 21.

EDGAR ALLEN JOHNSON, M.D., New York City, to Miss Lola Estelle Beatty of Coaling, Ala., April 25.

HARRY WEBSTER BURNETT, M.D., Dayton, Ohio, to Miss Elizabeth Vale of Franklin, Ohio, April 19.

CHARLES FRANKLIN MOON, M.D., Superior, Wyo., to Miss Olga C. Olsen of Harlan, Iowa, April 23.

MARY A. MACMILLAN, M.D., Spokane, to Mr. Henry B. Rodney, at Great Falls, Mont., April 7.

WILL AMBROSE THOMPSON, M.D., to Miss Nelle O'Toole, both of Liberty, Ind., April 22.

ARTHUR WILLIAM KOESSEL, M.D., to Miss Eleanora Knoeller, both of St. Louis, April 21.

EDGAR WARD HILL, M.D., Dayton, Ohio, to Miss Helen Vale of Franklin, Ohio, April 19.

LESTER IRVING OFNER, M.D., to Miss Clara Pines, both of Chicago, recently.

FELIX J. BAUR, M.D., to Miss Helen M. Sweeney, both of Chicago, April 4.

Deaths

George H. Moody, M.D., San Antonio, Texas; Tulane University, New Orleans, 1896; aged 44; a Fellow of the American Medical Association, and vice chairman of the Section on Nervous and Mental Diseases in 1911; president of the State Medical Association of Texas, in 1916; president of the Medical Association of the Southwest, in 1909; once president of the Bexar County Medical Society and Fifth District Medical Society; a member of the American Medico-Psychological Association; for six years a member of the staff of the state insane hospitals at San Antonio and Austin; founder of the Moody Sanitarium for Mental and Nervous Diseases, San Antonio; died April 29.

DeWitt Webb, M.D., St. Augustine, Fla.; College of Physicians and Surgeons in the City of New York, 1863; aged 77; formerly a Fellow of the American Medical Association; a member and once president of the Florida Medical Association; acting assistant surgeon, United States Army, in 1886; mayor of St. Augustine, in 1912; at one time a member of the New York State Legislature; a member of the State Legislature of Florida, in 1903; president of the St. Augustine Historical Society and Institute of Science; died in the Flagler Hospital, St. Augustine, April 12.

Ephraim Cutter, M.D., West Falmouth, Mass.; Harvard Medical School, 1856; University of Pennsylvania, Philadelphia, 1857; aged 84; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; a well known microscopist and a food expert; formerly professor of morphology and applied medicine in the College of Physicians and Surgeons, Boston; a prolific contributer to the literature of dietetics and morphology; for many years a practitioner of New York City; died at his home, April 25, from cerebral hemorrhage.

Herbert McIntosh, M.D., Boston and Cambridge, Mass.; Bellevue Hospital Medical College, 1896; aged 60; a Fellow of the American Medical Association; president of the Thurber Medical Association in 1899; a specialist in roentgenology; assistant to the department of nervous and mental diseases of the Massachusetts General Hospital; author of a "Practical Hand Book of Medical Electricity"; medical examiner (coroner) for the Seventh Norfolk District from 1896 to 1901; who was admitted to the bar in 1888; died at his home in Cambridge, Mass., April 24.

John Lawrence Dawson, M.D., Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1881; aged 57; a Fellow of the American Medical Association; fermerly president of the South Carolina Medical Association and the Medical Society of South Carolina; emeritus professor of medicine in his alma mater; visiting physician to the City Hospital, Charleston, and in charge of the eye and ear clinic of the Shirras Dispensary, Charleston; died at his home, February 20, from pulmonary emphysema.

Henry T. Godfrey, M.D., Omaha, Neb.; Rush Medical College, 1865; aged 76; formerly a Fellow of the American Medical Association; a member of the Nebraska State Medical Association; until 1911 a practitioner of Galena, Ill., where he was one of the founders of St. Mary's Hospital; district surgeon of the Chicago and Northwestern System; assistant surgeon of the One Hundred and Fifty-Sixth Illinois Volunteer Infantry, during the Civil War; died at the home of his daughter in Omaha, April 17.

Henry McHatton, M.D., Macon, Ga.; Bellevue Hospital Medical College, 1881; aged 61; a Fellow of the American Medical Association; and president of the Medical Association of Georgia in 1904, and of the Macon, Ga., Medical Society in 1890; a founder and member of the board of trustees of the Macon Hospital, and later chairman of the board; assistant surgeon of the Central of Georgia Railway; died at his home, April 22, from endocarditis following influenza.

Adoniram Judson Banker, M.D., Columbus, Ind.; Medical College of Indiana, Indianapolis, 1876; Bellevue Hospital Medical College, 1880; aged 71; formerly a Fellow of the American Medical Association; formerly professor of principles of surgery in the Central College of Physicians and Surgeons, Indianapolis; proprietor of the Columbus Surgical Hospital; local surgeon for the Pennsylvania and Big Four systems; died at his home, April 23.

Edwin McLaren Williams, M.D., Memphis, Tenn.; College of Physicians and Surgeons in the city of New York, 1896; aged 43; once president of the Memphis and Shelby County Medical Society; assistant to the chair of anatomy and demonstrator of anatomy in Memphis Hospital Medical College; chief sanitary inspector of Memphis, from 1900 to 1905; died at his home, April 12.

John William Anderson, M.D., Richmond, Va.; University of Maryland, Baltimore, 1854; aged 82; a practitioner of Alabama until the Civil War; and during the war engrossing clerk in the Confederate Senate; later deputy clerk of the Hustings Board of Richmond, and examiner of real estate titles; who was admitted to the bar in 1884; died at his home, January 9, from uremia.

Sherman F. Chase, M.D., Caro, Mich.; Detroit Homeopathic Medical College, 1872; aged 72; one of the organizers and Supreme Medical Examiner of the Order of Gleaners; coroner of Tuscola County, Mich., for twenty years; for several years president of the village of Caro; died suddenly at the home of his nephew in Bay City, March 30, from acute gastritis.

Nathan Rosencrantz, M.D., San Francisco; Cooper Medical College, San Francisco, 1888; University of Wurzburg, Germany, 1888; aged 49; formerly a member of the Medical Society of the State of California; for four years city physician of San Francisco; surgeon to the Municipal Railways; died in Lane Hospital, San Francisco, April 17, from diabetes.

Lyman Little Whitaker, San Antonio, Texas (license, Texas); a practitioner since 1858; aged 82; a veteran of the Civil War; at one time surgeon general of the Grand Army of the Republic; for many years surgeon of the San Antonio & Aransas Pass and Gulf Shore railroads; assistant surgeon to the Southern Pacific System; died at his home, April 16.

Joseph Martin Good, M.D., Williston, Fla.; Chattanooga, Tenn., Medical College, 1898; aged 46; a member of the Florida Medical Association; while driving across a railway track at Raleigh, Fla., April 20, was run over by a train, sustaining a crushing injury of both feet at the ankles, and died nine hours later in St. Luke's Hospital, Jacksonville.

Edward V. MacDonald, M.D., Chicago; Harvard Medical School, 1886; aged 58; a Fellow of the American Medical Association; professor of principles of medicine in the Chicago Hospital College of Medicine; for many years a member of the staff of Cook County Hospital; died at his home, April 28, from heart disease.

Madison G. Nixon, M.D., Columbia, Ill.; St. Louis Medical College, 1865; aged 73; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; a veteran of the Civil War, in which he served as a surgeon of U. S. Volunteers; died at his home, January 12, from cerebral hemorrhage.

Otto Leslie Castle, M.D., Kansas City, Mo.; University of Michigan, Ann Arbor, 1909; aged 32; a Fellow of the American Medical Association; who established the pathologic laboratory at the Kansas City General Hospital, and conducted it for three years; died at his home, April 30, from typhoid fever.

Alexander Thomson, M.D., Sumas, Wash.; College of Physicians and Surgeons, Baltimore, 1909; aged 44; a member of the Washington State Medical Association; and since 1912 a member of the staff of the Dalton Hospital, Sumas; died in that institution, April 19, after an operation for acute appendicitis.

John Wesley Pollard, M.D., Los Angeles; Cincinnati College of Medicine and Surgery, 1889; aged 56; formerly health officer of St. Johns, Mich., and physician of Clinton County, Mich.; surgeon to the Clara Barton Hospital, Los Angeles; was found dead in his office, April 14, from heart disease.

Roscoe George William Kinder, M.D., Rockford, Ill.; College of Physicians and Surgeons, Chicago, 1901; aged 41; a Fellow of the American Medical Association; a member of the attending staff of the Rockford City Hospital; died in that institution, April 19, from acute suppurative peritonitis.

Herschel N. Waite, M.D., Johnson, Vt.; Eclectic Medical College of the City of New York, 1882; aged 67; formerly a Fellow of the American Medical Association; a member of the Vermont State Medical Society; health officer of Johnson for nine years; died at his home, March 9, from nephritis.

William Appleton Bell, M.D., Somerville, Mass.; Harvard Medical School, 1876; aged 66; a member of the Massachusetts Medical Society, and formerly president of the Somerville Medical Society; visiting physician to the Somerville Hospital; died at his home, April 3, from angina pectoris.

John Calvin Sutherland, M.D., St. Joseph, Mo.; St. Joseph, Mo., Hospital Medical College, 1879; aged 78; a member of the Missouri State Medical Association, and for many years a practitioner of Savannah, Mo.; died in St. Joseph Hospital, St. Joseph, April 24, after a surgical operation.

Justo del Risco, Jr., M.D., Center Moriches, N. Y.; College of Physicians and Surgeons in the City of New York, 1879; aged 58; formerly a practitioner of Brooklyn, and for many years a member of the staff of the DeMilt Dispensary; died in Brooklyn, April 13, from heart disease.

Frank G. Williams, M.D., Jacksonville, Fla.; Southern Medical College, Atlanta, Ga., 1891; formerly surgeon to the Camp Lumber Company, White Springs, and local surgeon of the F. C. and P. Railway, at Maclenney, Fla.; died in a hospital, in Jacksonville, April 20.

Erastus Test, M.D., Lafayette, Ind.; University of Michigan, Ann Arbor, 1868; Indiana Medical College, Indianapolis, 1873; aged 80; for more than half a century a teacher and since 1888 professor of mathematics in Purdue University, Lafayette; died at his home, April 22.

Sigmund Beck, M.D., Brooklyn; New York University, New York City, 1892; aged 50; formerly a member of the Medical Society of the State of New York; for many years visiting pediatrist to the Coney Island and Bay Ridge hospitals; died at his home, April 22.

William Edward Douglas, M.D., Middletown, N. Y.; Bellevue Hospital Medical College, 1876; aged 62; a Fellow of the American Medical Association; and a member of the medical staff of Thrall Hospital, Middletown; died at his home, April 21, from nephritis.

Samuel Joseph Bassford, M.D., Portland, Me.; Medical School of Maine, Brunswick, 1881; aged 68; a Fellow of the American Medical Association; died in St. Barnabas Hospital, Portland, March 16, from secondary hemorrhage, following a surgical operation.

Landon Augustus Colquitt, M.D., Rio Vista, Texas; Vanderbilt University, Nashville, Tenn., 1895; a member of the State Medical Association of Texas; aged 64; died at his home, April 19, from heart disease.

Henry Frost, M.D., Marshall, Va.; Medical College of the State of South Carolina, Charleston, 1861; aged 77; a member of the Medical Society of Virginia; died at his home, March 23.

John Buchanan Wilson, M.D., Ottumwa, Iowa; Trinity Medical College, Toronto, Ont., 1879; aged 44; a Fellow of the American Medical Association; died in Kansas City, Mo., April 20.

The Propaganda for Reform

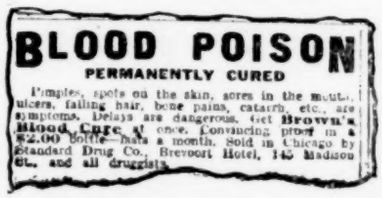
IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

MORE MISBRANDED NOSTRUMS

Whitehall's Megrimine.—The Dr. Whitehall Megrimine Co., South Bend, Ind., shipped in interstate commerce two batches of "Dr. Whitehall's Megrimine" which the government declared was misbranded. One of the batches was analyzed by the Bureau of Chemistry and reported to contain 211.88 grains of acetanilid to each avoirdupois ounce. Caffein and salol also were present. The average weight of the contents of one capsule was 5.66 grains. The second batch consisted of white capsules and pink capsules. The contents of the former, according to the analysis of the Bureau of Chemistry, were found to be a mixture of acetanilid (210.3 grains per avoirdupois ounce) caffein and salol. The average weight of the contents of one capsule was 6.24 grains. The pink capsules were found to contain antipyrin 98.03 per cent. and cayenne pepper. The government charged that the claim that these products were effective for the relief of all forms of headache and neuralgia, were a stimulant and tonic for the nerves and for relieving nervous exhaustion were false and fraudulent and made knowingly and wantonly. The company pleaded guilty and was fined $50 and costs.—[*Notice of Judgment No. 4540.*]

Do You SUFFER With
HEADACHE
or NEURALGIA?
One trial of Megrimine is sufficient—your suffering will cease. For over a quarter of a century—
Dr. Whitehall's
MEGRIMINE
has been a Godsend to victims of all forms of headache and neuralgia.
Write at once for a trial box without cost.
THE DR. WHITEHALL MEGRIMINE CO.
62 N. Lafayette Street, South Bend, Ind

Brown's Blood Treatment.—This preparation was manufactured and sold by the Brown Co., 935 Arch St., Philadelphia, and had formerly been called "Brown's Blood Cure." The preparation was analyzed by the federal chemists, who reported that it contained 5.65 grams of potassium iodid and 0.1 gram of a mercury compound to each 100 c.c. It was claimed to be a cure for syphilis in all its forms and to be effective in the treatment of all forms of rheumatism, chronic sores, chronic ulcers, scrofula, boils, carbuncles, eczema, contagious blood poison and various other conditions. These claims were declared to be knowingly and wantonly false and fraudulent. The company pleaded guilty and was fined $100.—[*Notice of Judgment No. 4443.*]


BLOOD POISON
PERMANENTLY CURED
Pimples, spots on the skin, sores in the mouth, ulcers, falling hair, bone pains, catarrh, etc., are symptoms. Delays are dangerous. Get Brown's Blood Cure at once. Convincing proof in a $2.00 bottle—lasts a month. Sold in Chicago by Standard Drug Co., Brevoort Hotel, 145 Madison St., and all druggists.

Classe's Great Penetrating Liniment.—William P. Diggs of St. Louis, who traded under the name W. P. Diggs & Co., sold this preparation, which contained 64 per cent. alcohol, 10 minims of tincture of opium to the ounce and 38 minims of chloroform to the ounce. Government chemists reported that analysis showed the liniment to be "an alcoholic solution of ammonia, chloroform, opium, camphor, oil of sassafras, oil of origanum and a thujone-containing oil such as thuja." The government declared that the claims that this liniment would prevent blood poison from wounds, was a remedy for tuberculous sores, would remove goiter and was a certain cure for colic in horses and mules were knowingly, reck-

lessly and wantonly false and fraudulent. Diggs pleaded guilty and was fined $10 and costs.—[*Notice of Judgment No. 4424.*]

Brown's "935" Injection (Formerly H. W.).—The Doctor Brown Company, Philadelphia, shipped in interstate commerce a quantity of "Brown's '935' Injection (formerly H. W.)." The Bureau of Chemistry reported that the preparation was "a dilute solution of acetate and sulphate of zinc." Some of the claims made for it were:

"Invaluable as a Preventive and in the Treatment of Chronic Gonorrhoea, Gleet, Whites, Etc."

"A Preventive and a Certain and Speedy Remedy for Chronic Gonorrhoea, Gleet, Whites, Etc."

These and similar claims were declared false and fraudulent. The company pleaded guilty and was fined $75.—[*Notice of Judgment, No. 4143.*]

Correspondence

TYPHOID IN AMERICAN CITIES

To the Editor:—I wish to comment on how false may be the impression of betterment of any one city's record comparable to neighboring cities as shown in the recent fifth annual report on typhoid fever. Each year the footnote reads that a false exaggeration is possible because nonresident deaths are recorded as well as resident deaths. For the cities in Connecticut there was reported to the state board of health for 1916, as total typhoid deaths, Bridgeport, 11; Hartford, 20, and New Haven, 12. This would give a rate per hundred thousand population of 9, 18.1 and 8, respectively. As printed in THE JOURNAL, the rates read 9, 6.3 and 8, respectively. The difference I find is that Hartford alone of the three cities returned resident deaths alone, seven in number. Instead of leading, Hartford either has a record no different from the previous year, or else if nonresident deaths do not count, New Haven's record becomes 5.3, with four nonresident deaths excluded. It would seem probable that other cities may have done the same to obtain a record, in which case such a point should be considered in obtaining the sixth annual report.

Also I would ask if it were not possible for a more critical criticism to be made of individual cities in terms of their own problems. For example, in 1915 the report asks why New Haven should continue to have ten times as much typhoid as Cambridge. Massachusetts probably and Rhode Island for certain are on record as having house closets even in rural neighborhoods. New Haven like the South, unlike the North, has yet numerous privies on sewered streets, let alone countless numbers on unsewered streets. New Haven's greatest sanitary expert, Prof. William H. Brewer, professor of sanitary science, Sheffield Scientific School, as president of the board of health placed himself yearly, even daily, on record for years that New Haven's typhoid problem was but one of privies. The survey for Springfield, Ill., placed that city also in the same class. Were it possible to make every city health officer criminally liable for typhoid deaths in excess of a rate of 10, I believe many cities the country over would have both active officials as well as a low typhoid rate by merely counting the number of privy vaults in their cities before abolishing them. Privy vaults and typhoid are not a special province of the South. An increase of population in Bridgeport due to munition workers should not explain an increased rate when New Haven had as great an increase of population for the same reason. Your compiler of statistics can then force improved rates from some cities by merely compelling the health officials of these cities to record resident and nonresident deaths separately as well as publishing their declaration as to the definite individual problem of that city which may not be water, milk or foods which yearly are the presumed factor.

D. M. LEWIS, M.D., New Haven, Conn.

[COMMENT.—The point raised regarding the possible false impression obtained by comparing one city with another, due to one city giving the total number of typhoid deaths and another only the number of deaths in cases arising in the city, was taken into account. Effort was made to secure the total number of deaths from typhoid fever in each of the cities named. It is conceded that, in order to be fair, the comparison should be made on this basis in each instance, and the footnote referred to was appended to call attention to the possibility of error in this respect. If figures were called for to show separately the number of typhoid deaths of nonresidents, or in cases arising from causes within and without the cities, the judgment or opinion of the health boards or officers compiling the figures would enter in and the conclusions deduced might be still more unfair than in the first instance. The suggestion that our study should be more critical of individual cities in terms of their own problems is perhaps pertinent, but this would be practically impossible. The further suggestion "to make every city health officer criminally liable for typhoid deaths in excess of 10" would be extremely unfair in view of the grossly inadequate assistance and appropriations for health work in every city in the land, and the shortcomings in other conditions bearing on typhoid fever, over which the city health officer has no possible control.—ED.]

SHORTAGE OF SALVARSAN AN INTOLERABLE BURDEN

To the Editor:—I have noted with great interest and satisfaction the beginning of a determined effort on the part of the Chicago and some other medical societies, to do away with the salvarsan patent burden. It is a relief, at last, to see the city men taking up a matter which has become an intolerable burden to us all. I hope and pray that this will not prove merely a sporadic effort, but that THE JOURNAL and all active medical periodicals as well as every county medical society will make this matter a propaganda which cannot be ignored by Congress. D. POWELL JOHNSON, M.D., Muscatine, Iowa.

THE DATING OF BIOLOGIC PRODUCTS

To the Editor:—The report of the Council on Pharmacy and Chemistry on this subject (THE JOURNAL, March 3, 1917, p. 728) seems to me a distinct advance. In a discussion of the matter with those active in the Council, it was suggested that a statement of the procedures adopted in the Bureau of Laboratories of the Department of Health, New York City, as well as our attitude toward additional requirements, would be of interest to the readers of THE JOURNAL. In the course of this statement, certain of the regulations of the Council are questioned. This is not to be interpreted as a criticism, as the regulations adopted by the Council are evidently preliminary and no doubt will be amplified with further experience in their enforcement.

Our present rules covering the distribution of biologic products are as follows:

1. The label on all bacterial vaccines must state the date of preparation. (This means the day suspensions are made, standardized and killed.)

2. The label on all serums other than antitoxins shall state the date of bleeding.

3. The label on antitoxins shall give the "Date tested XXXX," this being the date of last test on this preparation.

4. The label on vaccine virus shall, like the antitoxins, have the "date tested," this being the date of last test.

We have no intention of extending the periods of potency of bacterial vaccines (four months) or of the serums (nine months) other than the antitoxins until we have very specific data on which to act. The only possible exception is typhoid vaccine. The additional and necessary potency tests demanded by the Hygienic Laboratory as at present carried out mean practically a month's time in preparation. We may be compelled, as soon as we have sufficiently fair presumption to act on, to label the vaccine for four months' potency after completion of the tests. Comparative work indicates that it may be possible to determine the antigenic value in about ten days. The Hygienic Laboratory is at work on this problem, and if the shorter period method is successful, no change will be necessary for the present.

It might be well to state briefly our method of handling vaccine virus. The green virus is shipped to the laboratory

in a portable ice chest, the temperature of which varies from 5 to 8 C. It is immediately finished on its arrival and placed in cold storage on the same day, the temperature of storage being —15 C. As a rule, two weeks at least must elapse before sufficient purification takes place so that the virus will pass the bacteriologic tests required by the Hygienic Laboratory. Potency tests are then undertaken. This consists of a vaccination of children, and 100 per cent. of "takes" is necessary to pass a virus. The period of time in cold storage before potency tests are made varies from four to eight weeks. As soon as a potency test is completed, a return date of six months later is placed on this batch of virus (three months in summer) whether it is issued at this time or not. All viruses are retested every month. When issue is started, tests are made biweekly, and should they fail to give 100 per cent. of "takes," the virus is recalled. As the batch is issued, the date of the last test is stated; but the date of return remains the same for all of this batch, as stated above. All virus is kept in cold storage till issued. We have nearly always on hand parts of batches which have been in cold storage six months or more after the first potency tests. This, being continually tested, if 100 per cent. potent, is used locally in the department. We reserve the privilege of issuing such virus in emergencies, if we have a guarantee that it will be used promptly. Within the city limits the distribution stations are controlled by inspection so that adequate refrigeration is maintained. Naturally we have no responsibility as regards vaccine virus purchased by others for distribution.

I think you will agree with me that the methods employed more than meet the demands of the Council and, with the human potency tests, comprise as near an ideal system as can be devised for the protection of the purchaser.

In the regulations in their present form there are several points which seem to me to leave opportunities for misunderstanding if not for actual fraud. For instance, "the date of killing of the bacteria shall be taken as the date of manufacture" (Section 3). Does not this leave a loophole by which bacterial suspensions could be placed in cold storage and heated at any time thereafter, and this given as the date of killing?

The intention of Section 4 is not clear to me. As I understand it, it seems to defeat the purpose of the preceding paragraphs. Does this mean that serums other than antitoxins and bacterial vaccines can be placed in cold storage for 364 days after actual preparation or date of bleeding and then issued with a new date (issue), implying that the latter date is the date of preparation or of bleeding? If so, I do not see how your regulations will improve present conditions.

The same objection holds as regards the "date of manufacture" of vaccine virus. I agree that the potency will be maintained to a large extent under the conditions given, but why not qualify, for example, that the actual date of potency test within the periods mentioned, will be accepted, the date of "testing" to be stated, not a pseudodate of preparation?

I cannot but feel that a uniform demand for the date of preparation should be demanded for all bacterial vaccines, the date of bleeding on all serums, and the last date of potency tests for antitoxins and for vaccine virus would be better than to allow substitute terms such as date of issue, etc. The duration of potency allowed could then be based on the facilities for storage and the influence of the latter on potency.

Another point which I should like to raise, which undoubtedly the Council is considering, is the labeling of certain products as to their contents and, wherever feasible, as to their potency. For instance, pneumococcus serum means nothing without a statement as to "type," and furthermore there seems no reason why the potency of the serum in relation to "type" should not be required. In the case of some serums, such statements are not immediately feasible because we know relatively little, first, as to the relationships of the bacteria used for immunization and, secondly, as to determining potency. Even the results of imperfect tests in some instances are preferable to none at all, and would at least indicate that every effort was being made to keep the product up to its highest efficiency. At least the physician has a right to know everything concerning the content and potency of a product. When because of a lack of knowledge we cannot guarantee either the applicability to a given case or the potency of a product, we should frankly say so.

One great step in this direction would be a demand for the discontinuance of the term "polyvalent" unless evidence is submitted that a product is truly polyvalent. For instance, a polyvalent pneumococcus or streptococcus vaccine or serum is a practical impossibility with our present knowledge, yet such terminology is used and the physician misled.

WILLIAM H. PARK, M.D., New York.
Director, Bureau of Laboratories, Department of Health, City of New York.

COMPULSORY HEALTH INSURANCE

To the Editor:—May I point out one feature of the health insurance bill as at present drafted which, while seemingly of especial interest to the medical profession, is really of equal interest to the community, but which is usually ignored? Certainly its importance to the beneficiaries of the bill and hence to the general community seems to be overlooked. I refer to the fact that no specific price is set for the services of the physicians who will be required to do the actual work in caring for and protecting the health of the workers. It is stated by the sponsors for the bill that it is desirable to leave the determination of fees to the commission. It is estimated by those favoring the bill that for $2,000 annually physicians need make only from twenty to thirty calls a day, and we are given to understand that such an assured income is a very liberal one for a physician, while the amount of work required of him is sufficiently light to permit him ample time for sleep, rest, recreation and study. Striking an average with these figures, we find that twenty-five calls a day total 9,125 calls a year, for which a return of $2,000 a year is to be considered liberal! This figures out 22 cents for each call. Do the well intentioned sponsors of the bill really believe that human beings practicing medicine are so different from human beings in other walks of life that for 22 cents they will render service worth much more than 22 cents? Or do they believe that medical service rendered at a cost of 22 cents a call ever was or ever will be competent and thorough? It is well for all to understand that incompetent, hasty and slipshod medical service is much worse than none at all, for unaided nature can do better by the sick than the careless and hasty physician. It also cannot be too emphatically stated that no decent and self-respecting physician who cares anything about the quality of his work and about the effect of his service on his patients' health, can, single handed, make twenty-five calls a day and have left time enough to eat, rest, sleep, study and even sometimes play. In these swiftly moving times, what physician can keep afloat who has not time to read and study? And what human being can profit from reading and study attempted when physically and mentally exhausted? Therefore let all concerned clearly understand that, if it is sought to compel the earner to have medical attention which he now often fails to get, though he may sorely need it, the medical attention is worth having only if it is carefully and competently administered, and careful and competent medical service cannot be had at a price which will buy only the poorest and most incompetent. An underpaid doctor will not do good work; an overworked doctor cannot do good work.

M. SCHULMAN, M.D., New York.

Repairing Rubber Gloves.—N. I. Spriggs, M.D., a correspondent in the *Lancet*, March 31, 1917, describes his method of repairing rubber operating gloves by vulcanizing them, similar to the manner in which automobile tubes are repaired. Spriggs devised an electric vulcanizer for the purpose which he says is used in many military and civil hospitals, and a saving of 50 per cent. in glove bills may be effected in this way. The patches applied in this manner are so small as to be almost impalpable, they do not come off even after repeated sterilizations, a new finger can be put on, a long slit can be repaired, a new wrist affixed or two damaged gloves made into one good one.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DETECTION OF TUBERCLE BACILLI IN THE FECES

To the Editor:—In The Journal, Feb. 17, 1917, p. 588, in an abstract of an article in *Hygiea*, mention is made of the Reh ether extraction method of detecting tubercle bacilli in the feces. Can you furnish me with the technic of Reh's method? Also with the technic of the Engleson method likewise mentioned in the abstract?

Harold H. Fox, Tallahassee, Fla.

Answer.—The Reh method was described in the *Zeitschrift für Tuberkulose*, 1913, **21**, 209, and lauded as extremely simple and reliable, its superiority over other methods in vogue being shown by the tabulated findings with comparative tests with the Kozloff, antiformin and a diluted ether method. The lump of stool in an Esbach glass is stirred with a glass rod into enough freshly distilled boiled water to make a soft paste, solid enough not to flow when the glass is tilted. Then ether is added and the whole is briefly shaken, the glass stoppered with rubber. Then the ether is poured off into a centrifuge glass. A single centrifugation answers, and even this can be dispensed with, as the sediment settles soon on setting the glass aside. The ether is then decanted and the sediment is shaken up with a little remnant of the ether and poured out on the object glass. It adheres to the glass and the Ziehl stain is then applied. The sediment may be found to consist predominantly of bacteria. Positive findings were obtained in the feces when they were not to be found in the sputum in some cases, and in others when there was no expectoration. Engleson's method consists merely in scraping the rectal mucosa with an ordinary sound which has been hollowed out at one end to make a spoonlike cavity. The sound is introduced for a few centimeters into the rectum and drawn around to scrape the surface. The grayish slimy mass thus collected in the spoon cavity is smeared directly on the object glass.

LITERATURE ON WHOLE TIME HEALTH SERVICE

To the Editor:—Please inform me where I can find literature on the subject of whole time health service, and also where I can get information as to the names of cities and large towns which employ a whole time health officer.

Have any articles on this subject appeared in The Journal during the past year?

S. H. Boyer, M.D., Duluth, Minn.

Answer.—

Abercrombie, T. F.: Plea for All Time Health Officer in Every County, *Georgia Med. Assn. Jour.*, February, 1916.

Way, J. H.: Rural Sanitation in South, Two Vital Forces, Whole Time County Health Officer and Specialized Units of Health Work by State Boards of Health, *South. Med. Jour.*, March, 1916.

Kerr, J. W.: The Need of Full Time Health Officers, The Journal, Nov. 6, 1915, p. 1595.

Grote, C. A.: Full Time Health Officer Work in Walker County (Ala.), *South. Med. Jour.*, December, 1915.

Cowing, H. A.: Need of Whole Time Health Officer, *Lancet-Clinic*, Aug. 22, 1914.

Full Time Health Officers, Miscellany, The Journal, March 14, 1914, p. 874.

Wood, H. B.: Need of Whole Time Health Officers, The Journal, Nov. 15, 1913, p. 1772.

Leathers, W. S.: Whole Time Health Officer, Society Proceedings, The Journal, May 10, 1913, p. 1486.

Fort, A. G.: Need of Full Time County Health Officers, *Georgia Med. Assn. Jour.*, May, 1913.

Directory of City Health Officers: Pub. Health Rep., 1916, **31**, 1669.

THE TWO MASCAGNIS: MUSICIAN AND ANATOMIST

To the Editor:—Kindly inform me if you have given in your column of "Tonics and Sedatives" Mascagni, the author of "Cavalleria Rusticana" and other works, as being an investigator of the lymphatics a century ago? See The Journal of the American Medical Association, March 17, 1917, page 850, first column. I hear Morgagni exclaim: "What is fame?"

E. E. Blaauw, M.D., Buffalo.

Answer.—This item does not belong in Tonics and Sedatives. The statement to which Dr. Blaauw refers occurs in an editorial on "The Lymphatics and Infections of the Urinary Tract."

No one can charge the deficit in our knowledge of the lymphatics to the novelty of the subject, for more than a century has elapsed since the lymph system in its entirety was described by Mascagni.

Paolo Mascagni was an Italian anatomist who lived from 1755 to 1816. He wrote a most complete work on lymphatics. This work was entitled "Vasorum lymphaticorum corporis humani historia et iconographia," Sienne, 1787, in-fol., with forty-one plates.

Pietro Mascagni was an Italian composer, born 1863. Besides various musical works and songs, he wrote the operas "Cavalleria Rusticana," "L'Amico Fritz" and "I Rantzau."

Giovanni Battista Morgagni, 1682-1771, was also an Italian anatomist and pathologist who is regarded as the founder of pathologic anatomy, and his most famous work is "De sedibus et causis morborum per anatomen indagatis" libri V, Venice, 1761. Numerous anatomic structures are associated with his name. He did no special work on the lymphatics.

Dr. Blaauw's sense of hearing must be very acute if he hears Morgagni complain because he is not credited with something he never did.

LUBRICATING JELLY

To the Editor:—1. What is the composition of "K-Y Lubricating Jelly"?

2. Can you furnish a formula for a simple nongreasy lubricating jelly?

S. T.

Answer.—1. The composition of "K-Y Lubricating Jelly" has not been divulged. Examination of the advertising matter reveals only meaningless statements, such as: "This is a judicious combination of vegetable products . . . Combined in well balanced proportions with non-irritating antiseptics . . . ." "It incorporates a sufficient quantity of mild antiseptics (of the Thymol class) . . ." and ". . . contains *NO* formaldehyde."

2. Probably a simple tragacanth jelly, which can be made cheaply, will produce the same effects as those of the proprietary preparation. The following formula was published by Mr. J. K. Thum, apothecary at the German Hospital, Philadelphia (*Druggists Circular*, September, 1915, p. 586):

LUBRICATING JELLY

Tragacanth, whole	3 gm.
Glycerin	25 c.c.
Phenol	1.5 gm.

Distilled water, a sufficient quantity to make 300 c.c. The tragacanth is broken in small pieces, and put into a wide-mouthed bottle; the other ingredients are added and the bottle frequently shaken.

In regard to this formula, Mr. Thum writes:

It has been used in our gynecologic department for years. . . . For the last six years we have been dispensing it in collapsible tubes throughout the hospital for general work.

USE OF SALVARSAN IN TABES WITH OPTIC ATROPHY

To the Editor:—Is salvarsan contraindicated in a case of moderately advanced tabes in which there are symptoms, one eye being almost blind. Any information you can give me on the treatment of tabes will be greatly appreciated.

Please omit my name. L. L. A.

Answer.—It is asserted by some observers that salvarsan occasionally produces optic atrophy. Others, however, including men who have had extensive experience in the use of this drug, believe that it has no injurious effect on the eye. As blindness caused by optic atrophy occurs in about 10 per cent. of cases of tabes, it is well to warn the patient of this fact, and that his vision is liable to become impaired after treatment with salvarsan. If given at all, it should be administered early in the disease.

THE OLD AUTOMOBILE SUPPLY SCHEME

To the Editor:—For the benefit of those who might be as easy as I, please publish this. A man representing a firm known as the Smith Morris Service Company, of 2417 State Street, Chicago, called on me stating that by depositing $15 with him I would be a member of the Smith Morris Service Company and would receive all automobile supplies that I might purchase from the said company at cost f. o. b. factory for two years from date. I tried him out on half to show what I could save, the balance to be paid when I saw the good it would do me. I was done good. My letters to the firm so named came back "unknown."

M. Burnett Weaver, M.D., Miamisburg, Ohio.

Comment.—There are not many who would acknowledge their error as Dr. Weaver has done. The scheme is, of course, an old one, and is being worked right along.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

DELAWARE: Dover and Wilmington, June 19-21. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA, Regular: Palatka, June 19-20. Sec., Dr. E. W. Warren, Palatka.

GEORGIA: Atlanta and Augusta, May 31-June 2. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 14-16. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Iowa City, June 7-9. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KENTUCKY: Louisville, June 19-21. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 7-9. Sec., Dr. J. A. Henderson, 921 Canal St., New Orleans.

MARYLAND: Baltimore, June 19. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

MICHIGAN: Ann Arbor, June 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 5-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 19-20. Sec., Dr. W. S. Leathers, Oxford.

MISSOURI: St. Louis, June 18. Sec., Dr. J. A. B. Adcock, Jefferson City.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. Alexander MacAlister, 138 East State St., Trenton.

NEW YORK: Albany, Buffalo, New York, and Syracuse, May 22-25. Sec., W. J. Denno, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. H. A. Royster, 423 Fayetteville St., Raleigh.

OHIO: Columbus, June 11-14. Sec., Dr. George H. Matson, State House, Columbus.

OREGON: Portland, June 5. Sec., Dr. Herbert S. Nichols, Corbett Bldg., Portland.

SOUTH CAROLINA: Columbia, June 12. Sec., Dr. A. Earle Boozer, 1106 Hampton St., Columbia.

TENNESSEE: Knoxville, Memphis and Nashville, June 15-16. Sec., Dr. A. B. De Loach, Scimitar Bldg., Memphis.

TEXAS: Austin, June 19-21. Sec., Dr. M. F. Bettencourt, Mart.

VIRGINIA: Richmond, June 19-22. Sec., Dr. J. W. Preston, 215 S. Jefferson St., Roanoke.

District of Columbia January Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Jan. 9, 1917. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, of whom 8 passed and 5 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University		(1915)	84.6
Chicago College of Medicine and Surgery		(1915)	85.5
Rush Medical College		(1914)	82.9
University of Maryland		(1913)	78.6, 82.2
Cornell University		(1911)	88.2
Temple University		(1915)	77
University of Virginia		(1914)	87.1
	FAILED		
Baltimore Medical College		(1905)	71.9
College of Physicians and Surgeons, Boston*		(1916)	72.7
Minneapolis College of Physicians and Surgeons		(1909)	73.4
Meharry Medical College		(1916)	69.6, 69.9

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1912)	W. Virginia
Medico-Chirurgical College of Philadelphia		(1904)	New Jersey
University of Virginia		(1908)	W. Virginia

* This college reported not recognized by the Massachusetts Medical Society.

Indiana January Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, Jan. 9-11, 1917. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed, including 1 osteopath. One candidate did not complete the examination. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1917)	87.2
University of Michigan Medical School		(1915)	93.8
University of Pennsylvania		(1913)	92.1

South Dakota January Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Pierre, Jan. 10, 1917. The total number of subjects examined in was 15; total number of questions asked, 125; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1916)	77.7
Rush Medical College		(1915) 86.1; (1916)	86.1
Kentucky School of Medicine		(1893)	80.5
Detroit College of Medicine and Surgery		(1916)	87.7
University of Minnesota		(1916)*	87.3
Washington University		(1910)	79.5
John A. Creighton Medical College		(1909)	85.1

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado		(1913)	Colorado
University of Pennsylvania		(1914)	Minnesota

* In 1917, on completion of a year's internship, will receive diploma dated 1916.

Vermont February Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the practical and written examination held at Montpelier, Feb. 13-15, 1917. The total number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 3, of whom 2 passed and 1 failed. One candidate was granted a reregistration license by examination. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1915)	76.9
Tufts College Medical School		(1916)	85.4
	FAILED		
Kentucky School of Medicine		(1906)	59.1

Book Notices

A MANUAL OF PHARMACOLOGY AND ITS APPLICATIONS TO THERAPEUTICS AND TOXICOLOGY. By Torald Sollmann, M.D., Professor of Pharmacology in the School of Medicine of Western Reserve University. Cloth. Price, $4.50 net. Pp. 901, with illustrations. Philadelphia: W. B. Saunders Company, 1917.

A LABORATORY GUIDE IN PHARMACOLOGY. By Torald Sollmann, M.D., Professor of Pharmacology in the School of Medicine of Western Reserve University. Cloth. Price, $2.50 net. Pp. 355, with 62 illustrations. Philadelphia: W. B. Saunders Company, 1917.

The manual, the larger of the two books, is intended for both study and reference. According to the preface:

> Pharmacology comprises some broad conceptions and generalizations, and some detailed conclusions, of such great and practical importance that every student and practitioner of medicine should be absolutely familiar with them. It comprises also a large mass of minute details which would constitute too great a tax on human memory, but which cannot safely be neglected. It is the ambition of this book to present both types of information without confusion. The matter in the larger print aims to give a connected and concise statement of the essentials of pharmacology. The smaller print need not be considered by the reader who wishes to obtain merely a general knowledge of pharmacology. It contains more detailed data for consultation. Side headings have been introduced liberally to facilitate this use.

The manual is of such broad scope that only a few of the most important subjects can be be mentioned in a review; for example, under the treatment of disease are considered the chemical and physical basis of pharmacology, the manifestations of pharmacologic actions, classification of drugs according to selective action, the administration of drugs, conditions influencing absorption, the excretion of drugs, dosage (posology), and conditions influencing drug actions. Introductory topics include pharmacy, toxicology and prescription writing. The book gives a concise description of each drug, its source and its chemical and physical properties. The pharmacologic actions of the drug are then discussed in a comprehensive and painstaking way, and the therapeutic possibilities and limitations discriminatingly indicated. Drugs

of doubtful value are considered as fully as their importance warrants. The principal drug preparations and their dosages are listed. Exhaustive references to the literature are everywhere given, and for this all those interested in the study of medicine will be grateful to Dr. Sollmann. By placing the fundamentals in coarse print and the supplementary information in fine print, he has admirably succeeded in combining a manual and a reference work: The subject matter in coarse print, if considered alone, constitutes a textbook in pharmacology, while the book as a whole is practically an encyclopedia of the subject. The book is sound, contains a wealth of material well digested, and is a distinct credit to American pharmacology. The busy practitioner who wishes to know the present-day therapeutic status of any drug likely to be encountered should possess this book, as it gives an up-to-date estimate of drugs, which every practicing physician will find of direct interest and value. The time is past when the "clinical" estimate for a drug can longer be based on uncritical observations and statements handed down from book to book. Physicians who are abreast of the times must know the scientific evidence for the value of drugs, and for this they can obtain no better work than Dr. Sollmann's manual.

A Laboratory Guide in Pharmacology contains concise directions for performing experiments. In Part I the exercises include general reactions of plant constituents, pharmaceutic preparations, isolation of poisons, special tests for the more important alkaloids, glucosids, neutral principles and aromatic and aliphatic compounds and heavy metals, chemical study of the excretion of drugs in man, chemical antidotes, adsorption by colloids, selective solvents, osmosis and diffusion, effects of drugs on hemoglobin and on ferments, and many other topics. Part II is devoted to experiments on animals, and includes localization of actions, muscular contraction, perfusion experiments, the fate of drugs, and metabolism, with many subdivisions showing the effects of drugs on respiration, temperature and kidney excretion. Two sizes of type are used in the text. The more important topics are given in coarse print. These are confined strictly to the bare essentials needed by students who intend to become general practitioners of medicine, special stress being laid on the facts which have a direct practical bearing. Longer course demonstrations, etc., are introduced as optional in fine print. These are intended primarily for the instructor and investigator, and include numerous references to the literature, where more detailed information and different methods may be found. As the pharmacologist must be a chemist primarily, many of the exercises and tests described should be of distinct value to pharmaceutic and physiologic chemists, as well as to practicing physicians.

Pharmacology is one of the correlated medical sciences of recent growth, yet at the present time it stands on a firm footing. It is preeminently a laboratory and experimental subject. It can be approached in no other way. There is scarcely a branch of medical science that requires such specialized knowledge. Pharmacologic experimentation is fundamentally necessary for the development of the science of medicine, for the ultimate object of medicine is to cure disease, and the methods of attempted cure must be subjected to the most searching analysis regarding their efficiency and freedom from danger. The old days of therapeutic nihilism are past, not to return. Synthetic chemistry has been largely instrumental in accomplishing the transformation. Hosts of new drugs and chemicals are ready for therapeutic analysis. It is evident, therefore, that the pharmacologist must be a specialist, and it is equally evident that the author of pharmacology should be one who has been trained and developed as a specialist. Yet it is unfortunately true that most of the authors of pharmacologies in English are clinicians who have had early experience as pharmacists. They have had little, if any, personal experience or training in pharmacology. They are not specialists. For this reason it is a great pleasure to turn to such books as these by Dr. Sollmann, written by a man with great technical knowledge. He speaks with the authority of one with extensive personal experience. His discrimination is therefore good, his criticisms just, and his conclusions justifiable.

Medicolegal

Validity of Laws Fixing Minimum Percentage of Butter Fat for Ice Cream

(Hutchinson Ice Cream Co. et al. vs. Iowa. Crowl vs. Pennsylvania. (U. S.), 37 Sup. Ct. R. 28)

The Supreme Court of the United States, in these two cases, which were argued together, affirms judgments of the state supreme courts upholding state statutes which prohibited the sale of ice cream containing less than a fixed percentage of butter fat, the Iowa statute making 12 per cent. the required minimum, and the Pennsylvania statute 8 per cent. Mr. Justice Brandeis delivered the opinion of the court, which says that the statutes were assailed as invalid under the fourteenth amendment to the federal constitution. The plaintiffs in error (defendants) did not contend that the particular percentage of butter fat set by Iowa and Pennsylvania were so exacting as to be in themselves unreasonable. Thirteen other states have by similar legislation set 14 per cent. as the minimum, and five other states 12 per cent.; only eight states have fixed a percentage as low as Pennsylvania, and the United States Department of Agriculture has declared 14 per cent. to be standard. The main objection urged was this: To require that ice cream, in order to be legally salable, must contain some butter fat is a regulation so unreasonable and arbitrary as to be a deprivation of property without due process of law and a denial of the equal protection of the laws. To support this contention the following trade facts were shown: The ice cream of commerce is not iced or frozen cream. It is a frozen confection—a compound. The ingredients of this compound may vary widely in character, in the number used, and in the proportions in which they are used. These variations are dependent on the ingenuity, skill and judgment of the maker, the relative cost at a particular time or at a particular place of the possible ingredients, and the requirements of the market in respect to taste or selling price. Thus, some Philadelphia ice cream is made of only cream, sugar and a vanilla flavor. In making other Philadelphia ice cream the whites of eggs are added; and according to some formulas vanilla ice cream may be made without any cream or milk whatsoever; for instance, by proper manipulation of the yolks of eggs, the whites of eggs, sugar, syrup and the vanilla bean. All of these different compounds are commonly sold as ice cream, and none of them is necessarily unwholesome. Plaintiffs in error contended that as ice cream was shown to be a generic term embracing a large number and variety of products, and the term as used does not necessarily imply the use of dairy cream in its composition, it is arbitrary and unreasonable to limit the ice cream of commerce to that containing a fixed minimum of butter fat. But the legislature may well have found in these facts persuasive evidence that the public welfare required the prohibition enacted. The facts show that, in the absence of legislative regulation, the ordinary purchaser at retail does not and cannot know exactly what he is getting when he purchases ice cream. He presumably believes that cream or at least rich milk is among the important ingredients; and he may make his purchase with a knowledge that butter fat is the principal food value in cream or milk. Laws designed to prevent persons from being misled in respect to the weight, measurement, quality or ingredients of an article of general consumption are a common exercise of the police power. The legislature defines the standard article or fixes some of its characteristics, and it may conclude that fraud or mistake can be effectively prevented only by prohibiting the sale of the article under the usual trade name, if it fails to meet the requirements of the standard set. Laws prohibiting the sale of milk or cream containing less than fixed percentages of butter fat present a familiar instance of such legislation. This court has repeatedly sustained the validity of similar prohibitions. The conviction here under review was for selling the "compound" as ice cream, so that this court is not called on to determine whether the state may, in the exercise of its police power, prohibit the sale even of a wholesome product, if the public welfare appears to require such action

—and if, as here, interstate commerce is not involved. Nor is it necessary to consider whether the statutes are or are not assailable as health measures; and on this the court expresses no opinion.

Speculation as to Cause of Condition Not Tolerated

(Anton vs. C., M. & St. P. Ry. Co. (Wash.), 159 Pac. R. 115)

The Supreme Court of Washington affirms a judgment of nonsuit, on the ground that the testimony was insufficient to hold the defendant to a liability for the plaintiff's condition, where he claimed that tuberculous shoulder joint was caused by a fall which he had while working for the defendant as a section hand. The court says that it had the established facts that tuberculosis coming from a bruise is the unusual, rather than the usual, thing, and that it often develops without a known cause; and a controversy of opinion, one surgeon saying that he would assume as the most likely thing in the world that the fall caused the injury, and another saying that the theory of the plaintiff was impossible. While the law permits expression of opinion, when doctors disagree in their diagnosis and prognosis in a field in which the reliance of laymen must depend on professional skill and learning in an obscure science, it will not tolerate speculation as to the cause of a condition. That must be proved with reasonable certainty. The court is not to be understood as limiting the extent or scope of medical expert testimony or proper prognosis based on established facts. That is a very different thing from what was attempted in this case, which was to fix a proximate cause for a disease becoming suddenly aggressive seven months after a slight injury, and which may have developed from some other cause or without a traumatic intervention. The law will note and compensate for consequences of injuries reasonably certain to occur, and will base its judgments on opinion evidence, but the court knows of no cases holding that the proximate cause of a disease can be traced by opinion evidence to an accident when the testimony, considering the lapse of time and the nonobservation of medical men, goes no further than to show that the injury might have been a sufficient cause. The disease with which the plaintiff was afflicted was not shown to be the usual, natural or probable consequence of the slight injury sustained. The contrary was shown.

Roentgenographic Plates Alone Not Evidence

(Bartlesville Zinc Co. vs. Fisher (Okla.), 159 Pac. R. 476)

The Supreme Court of Oklahoma reverses a judgment obtained by Plaintiff Fisher, for personal injuries, on account of error in the admission in evidence of certain roentgenographic plates tending to prove the existence of certain physical defects in and about the bony structure of his head. The evidence afforded to identify the plates was given by a physician who testified that from an examination of the plaintiff, based on symptoms related to him, he was unable to find the cause of the plaintiff's trouble, and sent him to another physician to have a roentgenographic plate made, and that he was not present when the plates were made. The witness further testified that his evidence, relative to the plaintiff's injuries, was based on the information divulged by these plates. The expert who made the plates did not testify, nor did any one who was present at the time the plates were made. The court says that the plates were not admissible in evidence, nor could they be, until they were properly identified or shown to have been made by trustworthy instruments properly used by a person skilled in making, reading and interpreting such plates, and further shown to be correct representations of the bony structure of the plaintiff's head. The admission of roentgenographic plates in evidence rests fundamentally on the theory that they are the pictorial communication of a qualified witness who uses this method of conveying to the jury a reproduction of the object of which he is testifying; this being true, the roentgenographic plates must be made a part of the testimony of some qualified witness, and the witness should qualify himself by showing that the process is known to himself to give correct representations, and that it is a true representation of such object.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, NEW YORK, June 4-8.

American Academy of Medicine, New York, June 4-5.
American Association of Anesthetists, New York, June 2.
Am. Assn. of Genito-Urinary Surgeons, Rochester, Minn., May 21-23.
Am. Climatological and Clin. Association, Lakewood, N. J., May 29-31.
American Dermatological Association, Cincinnati, May 24-26.
American Gynecological Society, Pittsburgh, May 31-June 2.
American Laryngological Association, Atlantic City, May 28-30.
Am. Laryn., Rhin. and Otol. Society, Niagara Falls, Can., June 1-2.
Am. Medico-Psychological Association, New York, May 29-June 1.
American Neurological Association, Boston, May 21-23.
Am. Ophthalmological Society, Virginia Hot Springs, May 29-30.
American Orthopedic Association, Pittsburgh, May 31-June 1.
American Otological Society, Atlantic City, May 29-30.
American Pediatric Society, White Sulphur Springs, May 28-30.
American Proctologic Society, New York, June 4-5.
American Psychopathological Association, Boston, May 24.
American Radium Society, New York, June 4.
American Society of Tropical Medicine, New York, June 4-5.
American Surgical Association, Boston, May 31-June 2.
American Therapeutic Society, New York, June 1-2.
Conference of State & Prov. Bds. of N. Amer., Washington, May 30-31.
Connecticut State Medical Society, New Haven, May 23-24.
Florida Medical Association, Atlantic Beach, May 18-19.
Maine Medical Association, Portland, June 12-13.
Massachusetts Medical Society, Boston, June 12-13.
Missouri State Medical Association, Springfield, May 14-16.
National Assn. for the Study of Epilepsy, Skillman, N. J., May 28-29.
New Hampshire Medical Society, Concord, May 16.
Ohio State Medical Association, Springfield, May 14-16.
Oregon State Medical Association, Portland, June 28-30.
Rhode Island Medical Society, Providence, May 31.
South Dakota State Medical Association, Yankton, May 28-30.
Washington State Medical Association, Spokane, June 17-19.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

April, VII, No. 4

1 Death Rates in Old and Young States. T. D. Tuttle, Seattle.—p. 359.
2 Study of Application of Score System to Sanitary Quality of Public Water Supplies in New York State. T. Horton and E. S. Chase, New York.—p. 380.
3 Bacillus Coli in Milk; Preliminary Report. F. A. Baldwin, St. Louis.—p. 391.
4 Report of Committee on Sanitary Control of Waterways. H. P. Eddy and Others.—p. 407.
5 Report of Committee on Refuse Collection and Disposal. S. A. Greeley and Others.—p. 412.
6 Progress Report of Committee on Venereal Diseases. W. F. Snow and Others.—p. 414.
7 Method of Distributing and Collecting Diagnosis Outfits for Bureau of Laboratories in Cleveland. R. G. Perkins, Cleveland.—p. 416.

Annals of Surgery, Philadelphia

April, LXV, No. 4

8 Lightning—Some of Its Effects. C. F. Hegner, Denver.—p. 401.
9 Spinal Cord Surgery; Report of Cases. H. Neuhof, New York.—p. 410.
10 *Treatment of Wound Infection by Peroxid-Phenol Solutions. J. O'Conor, Buenos Aires.—p. 438.
11 Case of Angioneurotic Edema with Visceral Crises. W. L. Dufield, Brooklyn.—p. 445.
12 Case of Stab Wound of Deep Epigastric Artery. P. G. Skillern, Jr., Philadelphia.—p. 450.
13 Case of Retroperitoneal Hernia into Duodenal Fossae. P. I. Nixon, San Antonio, Texas.—p. 456.
14 Isolated Abscess of Liver Complicating Appendicitis. H. O. Bruggeman, Fort Wayne, Ind.—p. 462.
15 *New Operation for Procidentia Uteri. W. T. Helmuth, New York.—p. 469.
16 Gross Pathology of Median Bar (Prostate) Formation. A. Randall, Philadelphia.—p. 471.
17 *Hemangioma Cavernosum of Bone; Report of Case. J. M. Hitzrot, New York.—p. 476.
18 Chronic Medullary Abscess of Long Bones; Report of Cases. W. M. Brickner, New York.—p. 483.
19 Treatment of Fractures of Femur, Especially in Old. G. T. Vaughan, Washington, D. C.—p. 491.
20 Fractures Through Neck of Astragalus. A. H. Montgomery, Chicago.—p. 495.
21 Supernumerary Bones of Foot; Roentgen-Ray Study. S. Kleinberg, New York.—p. 499.

10. Treatment of Wound Infection.—A further report is made by O'Conor of the good results which he has obtained

by treating desperate cases of infected railway wounds by four hourly irrigation with hot peroxid solution (2 ounces to the liter) followed instantly by hot phenol lotion (½ ounce to the liter), and the application of hot perchlorid of mercury fomentations (wrung dry). As to the best method of drainage, he recommends that, when the general symptoms, as indicated by elevation of pulse and temperature, and coated tongue, are combined with a foul discharging wound, ether should be administered, a tourniquet applied well above the lesion, and four to six incisions made into parts in which fluctuation or bogginess is indicated on digital palpation, always carrying one or two such incisions into, or from, the original wound. Next carefully inspect the wound and make digital pressure all round exterior of wound; if any leaking into cavity is observed, a closed forceps or director is pushed into track, and secondary collection located, a direct incision is made into the latter, and if there is no fear of anatomic sacrilege, there ought to be no hesitation in extending this incision in such a manner as to throw pocket, sinus and original wound into one open chasm. The cardinal factor in this treatment is the conversion of a septic cavity or cavities into one large open sore, and, O'Conor says, in nine cases out of ten, if this is properly done, and followed by four hourly irrigation with hot "peroxid phenol" lotions and hot fomentations, with absolute rest on a splint, the onset of repair is only a matter of hours, or at most a few days. When feasible, submersion in warm peroxid lotion, once or twice daily, is a useful adjunct.

15. **New Operation for Procidentia Uteri.**—After amputation of the cervix, and repairing the perineum, Helmuth opens the abdomen in the median line as usual. The operation proceeds now as in the usual hysterectomy, the round ligaments, broad ligaments and fallopian tubes being severed, and the peritoneum sewed down to the attachment of the bladder and around the cervix. The next step Helmuth believes to be original. The uterus is split longitudinally downward, to the point where the bladder is attached to the cervix, and the endometrium dissected out, from each cut section. Two incisions are made through the aponeurosis and body of the rectus muscle, and through the peritoneum; each incision being distant one-half inch from the central incision through the rectus muscle, and each running in a direction parallel to it (the central incision). Each of these incisions should be large enough to permit one segment of the bisected fundus to be drawn through it. The central incision through the rectus muscle and peritoneum is sutured, and the two parts of the uterus are brought together, being then sewn over the now united aponeurosis and muscle. The skin and connective tissue are closed in after the usual fashion, over the fixed fundus of the uterus.

17. **Hemangioma Cavernosum of Bone.**—Hitzrot's patient, man, aged 25, complained of pain in the right shoulder, with some swelling about the joint. He dates his illness to an injury received six years ago while playing basket ball. This pain, etc., persisted for four months. Four years later, the pain reappeared in the shoulder after some unusual exertion and at this time the pain was chiefly evident on attempts to use the arm. Following this attack there was crepitus in the joint. This second attack was also relieved by baking and salicylates. Off and on since then the patient has suffered from slight pain in the shoulder joint following active use of that joint, and this pain was always relieved by salicylates. Examination: right deltoid prominent; tenderness over upper end of humerus not definitely localizable to any one spot; irregular mass, hard in character, attached to upper end of bone; distinct crepitation and pain in the joint when the arm was abducted against resistance. Roentgenogram showed a tumor mass composed of a bony shell with bony trabeculae dividing it into numerous cyst-like compartments which occupied the upper end of the humerus from the head well down to the deltoid attachment. The tumor seemed to spring from the outer surface of the bone, and except for the intertrochanteric region, did not seem to involve the shaft. The tumor was chiseled away from shaft of humerus, from greater tuberosity and from its attachment to the head, and removed in practically one piece with the underlying periosteum. The cavity in the head was scraped thoroughly and a small sequestrum surrounded by altered blood clot was removed. The surrounding shaft of the bone and the greater tuberosity presented a slightly eroded appearance, but was otherwise practically normal. The cavity in the head was then widened, and a piece of the deltoid attached to the clavicle was placed in the cavity to fill it, and sutured there. Pathologic report: cavernoma of bone with organization of extravasated blood.

Boston Medical and Surgical Journal

April 19, CLXXVI, No. 16

22 Treatment of Pernicious Anemia. R. C. Larrabee, Boston.—p. 553.
23 Retroversion of Uterus; Its Etiology and Rational Treatment. J. T. Williams, Boston.—p. 558.
24 Point Scale for Measurement of Intelligence in Adolescent and Adult Individuals. R. M. Yerkes, Boston, and C. S. Rossy, New York.—p. 564.

Canadian Medical Association Journal, Toronto

April, VII, No. 4

25 War Nephritis. R. D. Rudolf, Toronto.—p. 289.
26 Abdominal Wounds as Seen at Casualty Clearing Station. E. Archibald.—p. 298.
27 War Surgery. D. Hingston.—p. 307.
28 Subacute Combined Sclerosis. G. S. Mundie and R. J. Erickson, Montreal.—p. 311.
29 *Duodenal Ulcers in Infancy. A. Brown, Toronto.—p. 320.

29. **Duodenal Ulcers in Infancy.**—Brown cites the case of a child admitted to the hospital on three successive occasions with a diagnosis of marasmus or atrophy, and on the final admission, duodenal ulcer. His age on the first admission was 3 months and just previous to death, 5 months. During the previous three months he had not thrived, and suffered alternately from constipation and diarrhea. The stools gradually reverted from the loose green type to those of a soap character. One day the child passed four dark colored, almost black stools of a tarry consistency. The test for occult blood was strongly positive. He was considerably weaker and more pale, he was listless, more dehydrated, with respirations of 76 and pulse 104—a provisional diagnosis of duodenal ulcer with hemorrhage was made at this juncture. Almost immediately the duodenal catheter was passed and about 5 c.c. of a bright yellow bile, filled with many brown flecks and numerous bright red flakes and streaks was obtained. This material showed a positive guaiac and microscopic test. A blood examination at this period revealed a severe degree of secondary anemia, the red cells being but 2,900,000 and the hemoglobin 38 per cent. A blood transfusion was immediately performed and 150 c.c. of the father's blood introduced. Following transfusion the infant passed two fairly large currant jelly stools and died from the effects of the hemorrhage eight hours later. Postmortem examination showed the organs to be normal with the exception of the stomach and duodenum, the former contained a coffee-ground material, while the latter was filled with 1½ ounces of blood clot of a currant jelly consistency due to the admixture of mucous. Situated 1.5 cm. from the pylorus was a fairly large "punched out" ulcer with a shelving base. Directly opposite this larger one were two smaller ones apparently in the process of healing as the margins were much more indurated and presented no bleeding points. Both of these measured approximately 4 mm. each.

Colorado Medicine, Denver

April, XIV, No. 4

30 Cesarean Section; Operation of Choice. L. H. McKinnie, Colorado Springs.—p. 102.
31 Immediate Submucous Operation for Traumatic Deflections of Septum. O. Orendorff, Canon City.—p. 108.

Illinois Medical Journal, Chicago

April, XXXI, No. 4

32 Appendicitis Complicating Pregnancy. A. P. Heineck, Chicago. —p. 215.
33 Complement Fixation Test in Diagnosis and Determination of Cure of Gonorrhea. L. D. Smith, Chicago.—p. 222.
34 Clinical Laboratory, Roentgen-Ray and Necropsy Findings in an Obscure Intestinal Disorder. H. M. Francis, Woodstock. p. 228.
35 Surgical Care of Trachoma and Its Sequelae. E. E. Edmondson, Mt. Vernon.—p. 230.
36 Hemorrhoids with Reference to Modern Ideas. R. H. Barnes, St. Louis.—p. 231.

37 Pyelotomy vs. Nephrotomy. J. Welfeld, Chicago.—p. 233.
38 Pneumonia. O. O. Hall, Milford.—p. 234.
39 Indications and Results in Radical Mastoid Operation; Résumé of Twenty-Six Cases. C. B. Welton, Peoria.—p. 235.
40 Tuberculosis of Hip in Children. E. L. Hendricks, Lanark.—p. 238.
41 Modern Treatment of Diabetes. C. H. Lovewell, Chicago.—p. 240.
42 Alcoholism; Its Psychology and Its Rational Cure by Psychotherapy. A. H. Burr, Chicago.—p. 245.
43 Matters Medical Pertaining to Marriage, or Physician as Educator. A. J. Butner, Harrisburg.—p. 247.
44 Few Minor Ailments Potentially Important. D. S. Booth, St. Louis.—p. 260.
45 Etiology and Diagnosis of Acute Endocarditis in Children. G. H. Withers, Chicago.—p. 263.
46 Survival of Superstition as Found in Practice of Medicine. J. M. Beveridge, Oregon.—p. 267.

Journal of Biological Chemistry, Baltimore

April, XXIX, No. 3

47 Partition of Nonprotein Nitrogen in Blood of Fresh Water Fish. D. W. Wilson and E. F. Adolph, Fairport, Iowa.—p. 405.
48 Creatin and Creatinin in Whole Blood and Plasma. D. W. Wilson and E. D. Plass, Baltimore.—p. 413.
49 *Studies in Bence-Jones Proteinuria. A. E. Taylor, C. W. Miller and J. E. Sweet, Philadelphia.—p. 425.
50 Determination of Cholesterol in Blood. W. R. Bloor, Boston. p. 437.
51 Diurnal Variations in Creatin Excretion. W. Denis, Boston. —p. 447.
52 Direct Determinations of Permeability. R. P. Wodehouse, Cambridge, Mass.—p. 453.
53 Microtitration of Ammonia, Observations on Normal Human Blood. G. D. Barnett, San Francisco.—p. 459.
54 Studies on Cholesterol. Influence of Bile Derivatives in Bloor's Cholesterol Determination. G. Luden, Rochester, Minn.—p. 463.
55 Hourly Elimination of Certain Urinary Constituents During Brief Fasts. I. Neuwirth, New York.—p. 477.
56 Corn as Source of Protein and Ash for Growing Animals. A. G. Hogan, Manhattan, Kan.—p. 485.
57 *Chemical Nature of Vitamins. Structure of Curative Modifications of Hydroxypyridines. R. R. Williams, Washington, D. C. p. 495.
58 Dietary Deficiencies of White Bean, Phaseolus Vulgaris. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 521.

49. **Bence-Jones Proteinuria.**—The only noticeable abnormality of the viscera in the case of myeloma studied by the authors was several old healed lesions of the lungs. The pleural cavities contained considerable clear straw-colored fluid. The long bones were not affected; but in the bones of the pelvis, ribs and vertebrae the marrow occupied a much greater space than usual, with marked thinning of the walls; the body of the sacrum was so spongy as scarcely to resemble bone at all, and the bony structure of the ribs in some places was not over 0.5 mm. in thickness. The subsequent histologic examination showed undoubted myeloma, a fact of interest, since the Roentgen ray had indicated no osseous abnormality. The urine contained 3.6 per cent. of Bence-Jones protein and there was also considerable albumin. The pleural fluid contained 0.11 per cent. Bence-Jones protein. The blood gave a well marked test; the protein appeared to amount to about 0.2 per cent. A method of separating the protein and of preparing a protein-free urine is also described. The authors believe that the protein is no proteose, but a higher protein of definite biologic stamp of endogenous origin, and might be derived either from the tumor cells of the myeloma, or produced through an interrupted or aberrant synthesis of some normal body protein.

57. **Chemical Nature of Vitamins.**—Preliminary experiments are described by Williams which suggest that nicotinic acid may exist in a betain form and that the curative properties of Funk's vitamin fractions of yeast and rice polishings may have been due in part to this isomeric form of nicotinic acid or a polymer or simple derivative of it.

Journal of Experimental Medicine, Baltimore

April, XXV, No. 4

59 *Passage of Neutralizing Substances from Blood into Cerebrospinal Fluid in Poliomyelitis. S. Flexner and H. L. Amoss, New York.—p. 499.
60 *Neutralization of Virus of Poliomyelitis by Nasal Washings. H. L. Amoss, New York, and E. Taylor, Burlington, Vt.—p. 507.
61 *Relation of Meninges and Choroid Plexus to Poliomyelitic Infection. S. Flexner and H. L. Amoss, New York.—p. 525.
62 *Survival of Poliomyelitic Virus for Six Years in Glycerol. S. Flexner and H. L. Amoss, New York.—p. 539.
63 *Cultivation and Immunologic Reactions of Globoid Bodies in Poliomyelitis. H. L. Amoss, New York.—p. 545.
64 *Pathologic Effects of Streptococci from Cases of Poliomyelitis and Other Sources. C. G. Bull, Baltimore.—p. 557.
65 *Serum Treatment of Twenty-Six Cases of Epidemic Poliomyelitis. H. L. Amoss and A. M. Chesney, New York.—p. 581.

59. **Neutralizing Substances in Poliomyelitis.**—Flexner and Amoss found that the cerebrospinal fluid taken very early and quite late in the course of acute poliomyelitis exhibits no neutralizing action on filtered poliomyelitic virus. The blood serum on the sixth day of the disease already contains the neutralizing principles. The injection of sterile horse serum into the cerebrospinal meninges in monkeys increases their permeability, so that they permit the immunity neutralizing principles passively injected into the blood to pass into the cerebrospinal fluid. The passage in passively immunized monkeys takes place during a relatively brief space of time and apparently only while the inflammatory reaction produced by the horse serum is at its height. It is established for monkeys and rendered probable for man that the intraspinal injection of immune serum in poliomyelitis is curative. In monkeys normal serum exerts no such action, and at present nothing can be stated definitely regarding the therapeutic effect of normal serum in man except that probably any benefits which may arise from its employment would be attributable not to the action of the serum as such, but to the escape of circulating immunity principles in the blood made possible by the aseptic inflammation set up by it in the meninges. As the immunity principles appear in the blood only after several days, and the reported favorable effects of the immune serum treatment relate to the first days of illness, the employment of normal serum is thus not indicated, while that of an immune serum is.

60. **Neutralization of Virus of Poliomyelitis.**—The results of fifty-six experiments by Amoss and Taylor showed that washings of the nasal and pharyngeal mucosas possess definite power to inactivate or neutralize the active virus of poliomyelitis. This power is not absolutely fixed, but is subject to fluctuation in a given person. Apparently inflammatory conditions of the upper air passages tend to remove or diminish the power of neutralization. But irregularities have been noted, even in the absence of these conditions. The neutralizing substance is water soluble and appears not to be inorganic; it appears to be more or less thermolabile, and its action does not depend on the presence of mucin as such. It is suggested that the production of healthy carriers through contamination with the virus of poliomyelitis may be determined by the presence or absence of this inactivating or neutralizing property in the secretions.

61. **Mechanism of Defense in Poliomyelitis.**—The importance first of the meningeal choroid plexus complex in preventing infection with the virus of poliomyelitis, and next of immune serum in offsetting the disadvantages and dangers arising from defects in the mechanism, is apparent, as is the bearing of the experiments reported by Flexner and Amoss on the serum therapy of epidemic poliomyelitis. The meningeal choroid plexus complex, normally is capable of excluding the circulating virus from the central nervous organs. The complex plays a part also in preventing infection from virus present on the nasal mucosa. Aseptic fluids which irritate, inflame, or even slightly alter the integrity of the meninges and choroid plexus, diminish or remove their protective function. Normal monkey or horse serum, isotonic salt solution, and Ringer and Locke's solutions, when injected into the meninges, promote infection with the virus of poliomyelitis introduced into the blood, the nose, or the subcutaneous tissues. Simple lumbar puncture and the withdrawal and return of the cerebrospinal fluid in normal monkeys, hemorrhage having been absolutely avoided, do not promote infection with virus injected into the blood; while the replacement of the cerebrospinal fluid of one monkey with that of another does in some instances lead to infection. Simple lumbar puncture attended with even very slight hemorrhage opens the way for the passage of the virus from the blood into the central nervous tissues, and thus promotes infection.

Hence, changes in the structure or function of the meningeal choroid plexus complex, too slight to be detected by chemical

and cellular changes in the cerebrospinal fluid or by morphologic alterations, suffice to diminish in an essential manner its protective powers. Of all the irritant fluids tested by the authors, immune serum alone injected into the meninges is not succeeded by infection from the virus introduced into the blood. The protective property of the immune serum is capable of overcoming the promoting action of normal monkey and horse serum and the other irritants mentioned.

62. **Survival of Poliomyelitic Virus.**—In the course of investigations on poliomyelitis conducted at the Rockefeller Institute, specimens of nervous tissues from human beings and monkeys, the subjects of poliomyelitis, have been regularly put aside in 50 per cent. glycerol in the refrigerator, the temperature of which has been kept at approximately 4 C. Some of the tissues were set aside in 1910, and others later. Flexner and Amoss recently tested certain specimens for activity and ascertained that monkeys may be infected with samples 6 and 4 years old. The symptoms and lesions caused by this virus are identical with those produced by that contained in the more recently collected spinal cord and medulla. The authors suggest that this power of survival under adverse conditions may not be without significance in respect to the recrudescence of poliomyelitis in a given locality and after a lapse of years.

63. **Globoid Bodies in Poliomyelitis.**—See editorial "Bacteriology of Poliomyelitis," The Journal, April 14, 1917, p. 1122.

64. **Streptococci from Poliomyelitis.**—See editorial, "Bacteriology of Poliomyelitis," The Journal, April 14, 1917, p. 1122.

65. **Serum Treatment of Epidemic Poliomyelitis.**—Amoss and Chesney describe in some detail the method used and the results attained in twenty-six cases of acute poliomyelitis treated with human serum from recovered and convalescent cases of the disease. Of twelve cases which showed paralysis at the time serum was first given, one patient died ten hours after the serum was given, two patients suffered some degree of extension of the paralysis, while the remaining nine showed no extension of the paralysis. Of fourteen cases in which no paralysis was detected at the time serum was administered, two patients developed respiratory paralysis and died; and two others developed some degree of weakness or partial paralysis of certain muscle groups. The ten remaining cases (71 per cent.) never showed any detectable weakness. In the ten instances in which no paralysis occurred, the fever, sometimes high, tended to fall rapidly to normal, the average time of the fall being 25.7 hours. These cases demonstrate the harmlessness of the serum when introduced intraspinally under suitable conditions. The earlier in the course of the disease the serum is employed in suitable doses, the more promise there is of benefit. The question of multiple and repeated injections of the serum has not yet been worked out. In the cases here reported and especially in the group in which no paralysis existed at the time of the first injection, the pathologic process either did not progress at all, or where there was extension, as in two cases the upper segment of the spinal cord became rapidly involved, and was followed by respiratory paralysis and death. Probably in cases in which some degree of muscular weakness develops soon after the injection of serum, reinjection twelve to twenty-four hours later may be advantageous.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

April, IX, No. 7

66 *Action of Strychnin in Certain Types of Cardiac Irregularities. M. I. Smith, Ann Arbor, Mich.—p. 365.
67 Endermic Reactions. Urticaria by Amins and Aromatic and Urea Derivatives. T. Sollmann, Cleveland.—p. 391.
68 Proportion in Which Epinephrin Distributes Itself Between Corpuscles and Serum in Relation to Technic of Testing for Epinephrin in Blood. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 393.
69 *Pharmacology of Vagina. J. A. Waddell, Charlottesville, Va.—p. 411.

66. **Action of Strychnin in Cardiac Irregularities.**—Strychnin is shown by Smith to have a depressant action on the excised heart of the frog and the rabbit. It slows the rate, and lessens the amplitude and the irritability of the heart. In sufficient concentration it may delay or prevent the irregularities produced in the isolated heart by aconitin, by ouabain, and by occluding certain branches of the coronaries. This is shown to be due to strychnin lessening the enhanced irritability of the heart which gives rise to such irregularities. Irregularities arising from impaired conductivity (cocain irregularity), or from excessive depression of the myocardium (apocodein and ergotoxin irregularities) are aggravated by strychnin. It is suggested with the greatest reserve that strychnin may have a place in the therapy of ectopic beats originating in the ventricles.

69. **Pharmacology of Vagina.**—Waddell presents the results of a study of the excised vaginae of nonpregnant nulliparous and multiparous animals. Spontaneous rhythmic contractions are exhibited by both the circular and the longitudinal musculatures of the excised vaginae of dogs, cats, rats, rabbits, guinea-pigs, sheep, hogs and cows, when suspended in oxygenated Tyrode's solution at body temperature. The application of drugs produces on the circular musculature of the excised vagina the same response as on the longitudinal. The excised vaginae of rabbits, dogs, hogs and sheep are stimulated by epinephrin, while those of cats, rats, guinea-pigs and cows are depressed. Accordingly, the motor sympathetic innervation is the more powerful in the former species; and the inhibitory, in the latter. After ergotoxin, the excised vagina of the rabbit is depressed, not stimulated, by epinephrin, so that the organ in this animal possesses an inhibitory sympathetic innervation as well as a motor. By nicotin, the excised vagina of the rabbit is stimulated and then depressed, a phenomenon which confirms Keiffer's demonstration of ganglion cells within the wall of the organ. Arecolin and physostigmin stimulate the excised vagina, which is in agreement with Falk's conclusions as to the presence of a parasympathetic innervation. Pilocarpin usually stimulates the excised vagina, but it at times produces depression in that of the rat. Atropin antagonizes the stimulating action of arecolin, physostigmin, and pilocarpin on the excised vagina. Scopolamin either produces no effect or a depressant one on the excised vagina. Ergot and hydrastis increase the amplitude of contractions but produce little change in the tone of the excised vagina. Morphin, cocain, pituitary extract, and barium chlorid stimulate the excised vagina. The excised vagina of the nonpregnant animal reacts to drugs, in most instances, like the uterus of its species.

Kansas Medical Society Journal, Topeka

April, XVII, No. 4

70 Recurring Dermatitis of Face, with Associated Atrophic Changes in Affected Areas. R. L. Sutton, Kansas City, Mo.—p. 91.
71 Indian Medicine Man. F. L. McDaniel, Osawatomie.—p. 95.
72 Bone Graft vs. Plate. H. L. Charles, Atchison.—p. 96.
73 Possible Rôle of Glands with Internal Secretion in Problems of Psychiatry. F. A. Carmichael, Osawatomie.—p. 98.
74 Iritis. O. R. Wolfe, Beverly.—p. 101.

Medical Record, New York

April 21, XCI, No. 16

75 Yellow Jacket and Flowery Kingdom. S. E. Jelliffe, New York. p. 663.
76 Pneumonia Analysis of Fifty-Three Cases. H. M. Moses, Brooklyn.—p. 666.
77 Constipation of Rectal Origin. W. F. Burrows and E. C. Burrows, New York.—p. 671.
78 Cervical Glandular Enlargements in Children. I. W. Kahn, New York.—p. 672.
79 Nonsurgical Treatment of Strictures. S. Steiner, New York. p. 676.
80 Case of Imperforate Anus. B. P. Thom, New York.—p. 678.
81 Modern Belief in Spontaneous Generation. C. L. Redfield, Chicago.—p. 679.
82 Available Means of Organization for National Service Among Medical Women of United States. M. S. Macy, New York. p. 681.

Michigan State Medical Society Journal, Grand Rapids

April, XVI, No. 4

83 *Adhesions of Pelvic Colon. J. T. Case, Battle Creek.—p. 145.
84 Evolution of Anesthesia. W. H. Dodge, Hancock.—p. 152.
85 Radial Cholesterin Stone in Gallbladder Surgery. H. J. Vanden Berg, Grand Rapids.—p. 158.

86 Intestinal Toxemia and Intestinal Stasis. C. D. Aaron, Detroit. p. 160.
87 Administration of Salvarsan in Concentrated Solution. T. H. Smith, Detroit.—p. 165.
88 Hemorrhage During Latter Half of Pregnancy. A. M. Campbell, Grand Rapids.—p. 167.
89 Errors in Diagnosis; Case and Its Lessons. C. W. Hitchcock, Detroit.—p. 170.
90 Ocular Changes in Multiple Sclerosis. W. R. Parker, Ann Arbor. p. 172.
91 Two Cases of Bladder Tumors; Carcinomatous Transformation of Papilloma; Medullary Squamous Celled Carcinoma. L. L. Youngquist, Ann Arbor.—p. 174.
92 History of Transfusion of Blood; Report of One Hundred and Fifty Transfusions. R. D. McClure, Detroit.—p. 178.

83. Abstracted in THE JOURNAL, Sept. 9, 1916, p. 835.

New York Medical Journal

April 14, CV, No. 15

93 Historical Notes on Medical School of University of Pennsylvania, with Some Discussion of Recent Problems in Medical Teaching. C. K. Mills, Philadelphia.—p. 673. To be concluded.
94 Ureteral Bougie as Aid to Diagnosis. C. H. Chetwood, New York.—p. 677.
95 American Physician and Preparedness. M. Ashford, Fort Leavenworth, Kan.—p. 679.
96 Early Diagnosis of Lobar Pneumonia. T. F. Reilly, New York. p. 681.
97 Newer Aspects of Infection in Pneumonia. E. Steinfield, Philadelphia.—p. 687.
98 Ritual Circumcision. M. S. Reuben, New York.—p. 688.
99 Administrative Control of Sick Indigents. C. Barker, New York. p. 690.
100 After-Treatment of Poliomyelitis. A. C. Geyser, New York. —p. 692.

April 21, No. 16

101 Empyema of Nasal Accessory Sinuses and Its Nonsurgical Treatment. H. Smith, New York.—p. 721.
102 Historical Notes on Medical School of University of Pennsylvania, with Some Discussion of Recent Problems in Medical Teaching. C. K. Mills, Philadelphia.—p. 725.
103 Four Plus Wassermann. D. M. Kaplan, New York.—p. 728.
104 Ionization Treatment of Cancer of Eyelids. G. B. Massey, Philadelphia.—p. 731.
105 Artificial Pneumothorax in Pulmonary Tuberculosis. S. Simon, Denver.—p. 734.
106 Successful Treatment for Pneumonia. S. Stern, Atlantic City, N. J.—p. 740.
107 Don'ts in Proctologic Practice. A. A. Landsman, New York.—p. 744.
108 Drug Addiction and Harrison Antinarcotic Law. J. C. Densten, Scranton, Pa.—p. 747.

Surgery, Gynecology and Obstetrics, Chicago

April, XXIV, No. 4

109 *Fascia Transplantation into Visceral Defects. H. Neuhof, New York.—p. 383.
110 Operative Immobilization of Spine. F. De Quervain and H. Hoessly, Basel, Switzerland.—p. 428.
111 *Effect of Removal of Gallbladder. E. S. Judd and F. C. Mann, Rochester, Minn.—p. 437.
112 *Simulation of Corpus Luteum and Retention Cysts of Ovary with Ectopic Pregnancy and Early Uterine Abortion. I. C. Rubin, New York.—p. 443.
113 Observations at British Base Hospital in France. K. Speed, Chicago.—p. 454.
114 Odontomata. C. W. Bonney and A. G. Ellis, Philadelphia.—p. 459.
115 Tubercular Cervical Adenitis in Children. W. E. Ladd, Boston. —p. 462.
116 *Surgical Research of Great Omentum. S. L. Bloomhardt, C. F. Andrews and R. R. Hetherington, Philadelphia.—p. 474.
117 *Experimental Studies of Pancreas. H. H. Patrie, L. A. Pyle and C. F. Vale, Philadelphia.—p. 479.
118 *Transplantation of Ureters into Intestines. J. S. Baird, R. L. Scott and R. D. Spencer, Philadelphia.—p. 482.
119 *Experimental Studies in Colonic Dilatation. J. Alexander, J. H. Arnett and J. A. H. Magoun, Philadelphia.—p. 484.
120 Technic for Drainage or Excision of Seminal Vesicle. J. H. Cunningham, Jr., Boston.—p. 487.
121 Treatment of Compound Fractures of Humerus and Femur by New Apparatus. H. T. Buckner, Seattle, Wash.—p. 491.
122 Immediate Complete Amputation of Umbilical Cord. R. L. Dickinson, Brooklyn.—p. 498.
123 Permanent Nerve Block for Chronic Intractable Pain. F. G. Dyas, Chicago.—p. 500.
124 Spiral Wire Drainage Tube for Surgical Drainage. F. A. Glasgow, St. Louis.—p. 501.
125 Medicinal Treatment of Amebic Abscess of Liver. W. Allan, Charlotte, N. C.—p. 503.
126 Two Fracture Devices. J. E. Cannaday and H. D. Hatfield, Charleston, W. Va.—p. 505.

109. **Fascia Transplantation Into Visceral Defects.**—This is a detailed report of an extensive experimental and clinical study which confirms the statements previously made by others that the free transplantation of fascia has a wide field of usefulness. In Neuhof's work large vesical defects (up to about one-half the bladder wall) were replaced by fascia with uniform success. The immediate anatomic and functional results of replacement of extensive ureteral defects by tubes of fascia were satisfactory. Large tracheal defects (involving as much as three cartilage rings and most of the anterior aspect of the organ) were invariably replaced successfully. Large esophageal defects were replaced successfully in all experiments. Perforation through the transplant invariably followed its simple implantation into gastric defects. On the other hand, smooth healing always occurred, even with very large defects, when gastro-enterostomy, with or without pyloric exclusion was added. Fascia transplantation into small defects in the upper part of the small intestine was occasionally successful, succeeded more often in the lower part of the small intestine, was most successful in the large intestine. In the latter, larger defects could often be satisfactorily replaced. The (altered) transplant became firmly and permanently adherent to large defects made in the liver. Large defects of the pleura and diaphragm were satisfactorily replaced by fascia. Good immediate results were obtained in transplanting fascia over large defects of the lung. The immediate functional and anatomic results of transplanting fascia into large defects of the pericardium were good. Large defects of the spinal dura were satisfactorily replaced by fascia. The clinical aspects are discussed in each of these groups of experiments. In addition, two clinical reports on fascia transplantation into defects of hollow viscera are appended. In one it is demonstrated for the first time that a large urethral defect can be very satisfactorily and very simply replaced by fascia. A similar demonstration is made in a large tracheal defect; this is the second case recorded in which fascia has been transplanted into a tracheal defect.

111. **Effect of Cholecystectomy.**—On the basis of experimental evidence Judd and Mann conclude that after removal of the gallbladder, all of the ducts outside the liver dilate. The sphincter at the entrance of the common bile duct into the duodenum is the chief factor in producing this dilatation. After cholecystectomy, this sphincter can withstand only a small percentage of the pressure which it normally maintains. When all the muscle fibers are dissected free from the intramural portion of the duct, the biliary tract does not dilate after the removal of the gallbladder.

112. **Simulation of Ovarian Cysts and Ectopic Pregnancy.**—From an analysis of the histologic findings in the cases personally encountered by Rubin, it appears that corpus luteum cysts and retention cysts of the ovary may simulate early terminated intra-uterine or extra-uterine pregnancy without either of these conditions actually having been present. On the other hand, it is more likely that in the majority of instances these retention cysts result secondarily through early embryonal death whether the impregnated ovum lodged within the uterus or within the tube. The ovum is in these instances disintegrated and absorbed and restitution (involution) takes place without the external or internal hemorrhage which we are accustomed to see in uterine or ectopic abortion. Rubin concludes that in all probability a great many nontragic ectopic pregnancies terminate in this way.

116. **Surgical Research of Great Omentum.**—The authors are convinced that their experimental work has shown the omentum to be quite capable of caring for gastric and intestinal perforations of varying sizes; that it can be used to advantage in anastomotic work, and is capable of preventing gangrene of large areas of intestine wall. Omental adhesions are less dangerous, and therefore are preferable to adhesions between adjacent loops of intestine. In excision of hepatic tumors the omentum may be utilized to advantage to give a broad base for the hemostatic suture of the excision wound. In drainage of the common bile duct, wrap the omentum around the drain to prevent leakage. Also where a part of the common duct has been removed a new duct may be constructed of omentum. For the relief of pyloric stenosis, cut

through the stenosed area and lay the omentum over the wound. Use the omentum to strengthen lines of abdominal vascular suture. In all resection of bowel and anastomosis wrap the free border of the omentum around. The omentum can be used to prevent gangrene; therefore in strangulation of the intestine from numerous conditions, as, for example, strangulated hernia, volvulus, etc., where there is doubt as to the viability of the intestine, the omentum may have one of its greatest fields of usefulness. Likewise in mesenteric thrombosis where there is doubt as to the blood supply to a certain area.

117. **Studies of Pancreas.**—The results of the authors' experiments were as follows: Four dogs in whom the duct was stripped from the uncinate process and anastomosed to the duodenum, made an uneventful and perfect clinical recovery. Necropsies after four, ten, eleven and twelve weeks, respectively, showed that the new ducts in all were patulous and of normal size. There was no evidence of leakage or suppuration, and only a few adhesions were present. The main and accessory ducts were closed in all four. Two dogs, in which the uncinate process and the head were amputated and the duct of the proximal end was stripped up and implanted into the duodenum, made a perfect recovery and showed no clinical symptoms. They were necropsied six and one-half and seven and one-half weeks after the operation and the implanted ducts were found open. There were a great many adhesions to the wound, and otherwise both were good specimens. A series of ten dogs in which the duct was stripped from the tail and used for the anastomosis, one dog died of distemper pneumonia seven days after the operation but the specimen even in that time showed a good result. Six dogs made good recoveries, clinically. Four of these dogs necropsied at five, five and one-half, seven and eight weeks after the operation, showed the old ducts closed and the implanted ducts open, except for one in which no patulous ducts could be demonstrated. There was no fat necrosis, leakage, suppuration, pancreatitis or pancreatic atrophy, and scarcely any adhesions. In two dogs killed seven weeks after operation, the main ducts were found patulous, due to the fact that the authors had neglected to suture a loop of omentum between the cut ends. The remaining three dogs of this series developed acute pancreatitis and died, one, three and five days, respectively, after operation.

118. **Transplantation of Ureters Into Intestines.**—This work would seem to confirm the conclusions reached by others, that when the periureteral lymphatics are not directly in contact with a virulent infection there is no ascending infection of the kidney. By passing the ureter through a normal opening into the intestine the authors were able to eliminate this focus of virulent infection, which gains a foothold in the intestinal wound when an abnormal opening is made. Also that valve action as the ureteral opening is of inconsequential value.

119. **Colonic Dilatation.**—The authors are of the opinion that until the causes of chronic intestinal stasis are better understood the operation of simple ileocolostomy should be abandoned, for in a large number of cases the same cause which produced the indication for the operation will also cause its failure. There is obviously no use in operating on a colon to rest it by a short circuiting operation when the entire wall has already been damaged beyond recovery. This is one more reason for giving up simple ileocolostomy. The operation should be abandoned until the cause of the intestinal stasis and the pathology which it produces are thoroughly understood.

Wisconsin Medical Journal, Milwaukee

April, XV, No. 11

127 Pediatrics and Its Relation to General Practitioner. W. R. Ramsey, St. Paul, Minn.—p. 397.
128 Myoclonus; Report of Case of Unverricht's Myoclonus Epilepticus. B. B. Rowley, Milwaukee.—p. 401.
129 Ectopic Pregnancy; Thirty-Seven Cases Treated by Operation. C. M. Echols, Milwaukee.—p. 408.
130 Some Business Aspects of Medical Career. W. E. Fairfield, Green Bay.—p. 415.
131 Chronic Colitis and Its Roentgenologic Findings. F. B. McMahon and R. D. Carman, Rochester.—p. 419.
132 Method for Obtaining Blood from Infants and Young Children for Wassermann Test. A. L. Kastner, Milwaukee.—p. 430.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

April 7, I, No. 2936

1 Pathology and Etiology of Infectious Jaundice Common at Dardanelles, 1915. C. J. Martin.—p. 445.
2 *Cases of Infection of Hemothorax by Anaerobic Gas Producing Bacilli. T. R. Elliott and H. Henry.—p. 448.
3 Case of Spirochetosis Icterohemorrhagica. R. Rimmer.—p. 453.
4 Cerebrospinal Meningitis. W. E. C. Dickson.—p. 454.
5 Case of Traumatic Pneumonia. J. Geoghegan.—p. 455.

2. **Hemothorax Infected by Gas Producing Bacilli.**—Infection by anaerobic bacilli according to Elliott and Henry occurs in about 10 per cent. of all cases of hemothorax from gunshot wounds of the chest that are seen in base hospitals in France. The infection leads to the development of malodorous gas which may occasionally be so abundant as to stimulate a large air pneumohemothorax, while the toxic features of the infection for the time being remain in the background. In the majority of cases the septic features are much more prominent than gas formation. The most serious of these features are jaundice, a rapid pulse (which may be the index of commencing pericarditis), and semidelirious restlessness. Less dangerous is the febrile type with a brilliant hectic flush on the cheeks. Diagnosis depends on exploratory puncture. In cases with the clinical aspect of sepsis it may be necessary to repeat the exploration on successive days, because it is a characteristic of anaerobe infection that the bacilli frequently fail to spread at once throughout the hemothorax, so that their presence is often missed at the first searching. Life can be saved in at least four-fifths of the cases if the infected blood is promptly drained away. A day's delay in putting such treatment into force, when once the infection is well established, may mean death to the patient. The clinical pictures caused by the sepsis vary widely in the individual cases of infection, but these differences cannot yet be correlated with the various forms of anaerobic bacilli that are proved to be present in each particular case.

Lancet, London

April 7, I, No. 4884

6 Paget's Disease of Nipple. W. S. Handley.—p. 519.
7 *Treatment of Severe Infected Gunshot Injuries of Shoulder and Elbow Joints. R. H. J. Swan.—p. 524.
8 *Cultivation of Malarial Parasite in Vitro. L. S. Dudgeon and C. Clarke.—p. 530.
9 Tetanus and Its Antitoxin. W. Turner.—p. 532.
10 Study of Dysentery. A. C. Inman and D. G. Lillie.—p. 533.
11 Case of Traumatic Dislocation of Knee Joint. H. Platt.—p. 534.
12 *Operative Treatment of Abdominal Aneurysm. W. I. de C. Wheeler.—p. 535.
13 Record of Sixty-One Cases of Neoplasms of Skin Treated by Roentgen Rays or Radium. A. A. R. Green.—p. 544.

7. **Treatment of Infected Gunshot Injuries of Shoulder and Elbow Joints.**—In all septic cases Swan makes it a routine practice of giving an injection of a mixed polyvalent streptococcus and proteus vaccine, and the wounded area is carefully roentgenographed to determine the nature and extent of any bony injury and the presence of metal fragments. Swan considers this preliminary injection of "antisepsis" vaccine of as much importance as the prophylactic injections of antitetanic serum, as by its means the spread of anaerobic infection is limited. If the ends of the bone entering into the formation of the shoulder or elbow joint are severely fractured, and if there is evidence of septic infection in the joint, he does not hesitate to open the latter freely, remove all completely detached fragments, and saw off the ends of the bone; the whole cavity is flushed with a forcible stream of hot, sterile water, and after arresting the bleeding, gauze is very lightly inserted into the cavity, into which are brought three or four small perforated tubes attached to a reservoir containing Dakin's solution or hypertonic saline, by which the cavity is frequently flushed. The incision is left freely open, perhaps one suture being used at the upper end. In the case of the shoulder Swan makes use of an oblique anterior incision between the deltoid and pectoralis major muscles, opening the joint at the side of the long tendon of the biceps.

If possible, the tuberosities and rotator tendons are left intact, but if the fracture involves the tuberosities they are removed, the periosteum being stripped from the upper part of the shaft and the bone divided through the surgical neck. A stab incision is then made from the posterior aspect of the joint backward to come out behind the shoulder, or the bullet track used, if conveniently placed, and a drainage tube inserted, the flushing tubes being introduced by the anterior incision. The arm is then fixed in a fully abducted and slightly flexed position.

In the elbow Swan uses a free, median, posterior incision, separating the tissues close to the bone, and, so far as possible, preserving the triceps tendinous attachment, and, of course, the ulnar nerve. The lower end of the humerus is projected from the wound and removed as may be found necessary, usually above the epicondylar line. The olecranon is removed together with the upper cartilaginous surface of the coronoid process and the cupped disk of the head of the radius. The cavity is then flushed with hot sterile water, lightly filled with gauze, and the irrigation tubes introduced. The arm is put up, flexed, and supinated, the wound being left freely open. After a few days, when granulations appear on the surface, passive movements are commenced and the forearm put up in a different angle of extension each day. As the wound fills up voluntary actions are encouraged.

8. **Cultivation of Malarial Parasite.**—A medium consisting of citrated normal saline containing varying strengths of glucose was used by Dudgeon and Clark. At first the strengths of glucose used were 2 and 5 per cent., and later two other strengths, 7.5 and 10 per cent., were tried. The strength of the sodium citrate in the medium was 1.5 per cent. A marked increase in the number of parasites in the culture tubes was noted in 9 of 31 cases of malaria. The present paper embodies the results obtained from 51 cases of clinical malaria. Using this medium, a diluted plasma with the addition of dextrose, the characteristic form which can be recognized as a plasmodium is what is termed here the "dot" form. In size it is smaller than the fine ring, the nucleus staining as a bright red dot and the protoplasm an intense blue, semilunar in shape. The appearance suggests the merozoite. Typical ring forms were infrequent. Of 10 patients whose control blood films after careful examination were considered as negative, "dot" forms were found in five cultures. Of 19 cases of malignant malaria, 4 only gave completely negative results in the citrate plasma medium, while 17 cases of the benign tertian parasite failed to grow under the same conditions. As a corollary of this, where film examinations are inconclusive as to the type of parasite, a positive culture in this medium points to malignant infection. The presence of quinin in the serum used in the culture medium influences the development of the plasmodium, the benign tertian parasite especially, in vitro.

12. **Operative Treatment of Abdominal Aneurysm.**—In three cases of abdominal aneurysm wire was introduced into the sac by Wheeler. In the first case of aneurysm of the aorta in the region of the celiac axis, operated on in August, 1910, a cage of 150 inches of Colt's wire was introduced. At the time of operation the aneurysm was thin walled and seemed ready to burst. The patient is still alive and well, at daily work in a brewery. The aneurysm has consolidated, and a loud systolic murmur present before operation has disappeared. The second patient, also reported in 1910, died in 1916, from rupture of the aneurysm, when acting as a stoker on board a patrol trawler. A wisp of 105 inches of wire was introduced in this case. The third patient was operated on in 1912 and died about a week after the introduction of the wire from rupture of the aneurysm following intestinal obstruction. A gastro-enterostomy was performed in this case as the aneurysm was obstructing the pylorus. The loop of jejunum fixed to the stomach became strangulated by pressure between the abdominal wall and the aneurysm; the consequent vomiting led to rupture of the sac.

Practitioner, London

April, XCVIII, No. 4

14 Operations for Appendicitis. J. E. Adams.—p. 301.
15 Some of Evils of Curetting. H. R. Andrews.—p. 314.
16 Scopolamin and Morphin in Labor. R. W. Johnstone.—p. 317.
17 Some Recent Vaccine Therapy. A. Fleming.—p. 322.
18 His Bundle Lesions. J. S. Goodall.—p. 328.
19 Venous Pulse. H. L. Flint.—p. 337.
20 Diseases of Nervous System. H. C. Thomson.—p. 352.
21 Treatment of Acute Lobar Pneumonia, with Special Reference to Cyanosis, Blood Pressure and Maintenance of Heart's Strength. A. Graham-Stewart.—p. 359.
22 Syphilis. G. C. Franklin.—p. 383.
23 Hematoma of Umbilical Cord at Childbirth, with Severe Hemorrhage Following Double Ligature of Cord. P. R. Cooper.—p. 389.
24 Enterospasm Following Shell Shock. P. C. C. Fenwick.—p. 391.

Archives de Médecine des Enfants, Paris

March, XX, No. 3, pp. 113-168

25 Diagnosis and Treatment of Congenital Stenosis of the Pylorus. C. G. Grulee and Dean Lewis (Chicago).—p. 113. Conclusion.
26 *Pseudomembranous Pneumococcus Infection in Nose or Throat. T. Reh (Geneva).—p. 131.
27 Metastatic Abscess Consecutive to Acute Suppurative Appendicitis. A. Androutsellis.—p. 143.
28 *Black Sweat in Girl of Fourteen. (Chromidrose et bromidrose chez une fille de 14 ans.) J. Comby.—p. 147.
29 Trychophyton Scalp Disease in Children. (Le kérion de Celse chez les enfants.) J. Comby.—p. 149.

26. **Pneumococcus Diphtheria.**—Reh reports eleven cases encountered at Geneva in which the symptoms, the false membranes and the course of the disease seemed to be unquestionably typical diphtheria, but bacteriologic examination showed them to be of pneumococcus origin. The patients were all children between 8 months and 7 years old. One had a pseudomembranous conjunctivitis, 4 a pseudomembranous sore throat, 5 membranous croup, with expulsion of the false membranes, and one had croup with the false membranes extending into the finer bronchi, and terminating fatally. All the others recovered rapidly and without complications. In treatment he advises diphtheria antitoxin as it is impossible to exclude diphtheria under two or three days, but bacteriologic examination is important for the prognosis, as pseudomembranous pneumococcosis develops like a purely local affection, without complications, and soon subsides. The sudden and stormy onset, the rapid course and usual absence of complications correspond to what we know of the ephemeral vitality and virulence of the pneumococcus. Comby insists that the false membrane cannot be distinguished in any way from that of diphtheria. No contagion developed from Reh's cases. Three of the children required intubation; in one the tube had to be introduced nine times with a total intubation of over twenty-seven days.

28. **Colored Sweat.**—Comby's patient is a girl over 14 who has never menstruated and is rather delicate and nervous, and has had leukorrhea for years. There is also a tendency to keratosis in the family. The child sweats readily; the sweat is of a disagreeable, pungent odor and the underclothing in the axillae becomes discolored with blackish stains as if stained with ink. The case resembles that reported by Blanchard in 1907 in a boy of 13 with black sweat below the eyes. A black pigment in this case was deposited around the sweat pores of the lids; it seemed to be of the nature of choroid pigment. Comby has also encountered a case of yellow chromidrosis. This was in a man of 28 who from childhood had had his flannel undervest stained yellow in the axillae. Linen and cotton did not take the stain. Chabbart in 1895 reported a case of yellow chromidrosis in a boy of 13 and related that the parents also had this yellow chromidrosis. It is possible, Comby suggests, that the leukorrhea in his case reported in detail may have some connection with the chromidrosis. He adds that chromidrosis is always regional, and may be blue, red or black, yellow or green. There is evidently some chromogen in the sweat which produces the color on oxidation from the air.

Paris Médical

March 10, VII, No. 10, pp. 197-212

30 *Experimental and Histologic Study of Shell Shock of the Internal Ear. War Deafness. (Commotion des labyrinthes.) Prenant and A. Castex.—p. 197.
31 Paralysis of the Sensory Pneumogastric. M. Vernet.—p. 202.
32 Indications for Extraction of Projectiles. A. Binet.—p. 206.
33 Successful Treatment of Comminuted Fracture of the Thigh. (Comment nous avons soigné la fracture de cuisse par coup de feu du sous-lieutenant-aviateur Jean Chaput.) Chaput and Truchet.—p. 209.

March 17, No. 11, pp. 213-228

34 *Renal Insufficiency with Gastro-Intestinal Disturbance in Soldiers on Active Service. C. Mattei.—p. 214.

35 *Paradoxic Pulse as Sign of Pericarditis with Effusion. P. Chavigny.—p. 219.

36 *The Nervous Disturbance with "Trench Foot." (Troubles objectifs de la sensibilité cutanée dans les gelures des pieds; l'acrotrophodynie paresthésique des tranchées.) J. Cottet.—p. 222.

30. **Shell Shock of Internal Ear.**—Prenant and Castex reproduced on six rabbits and ten guinea-pigs lesions similar to those induced in soldiers by the explosion of a shell near by. The cage with the animals was placed close to cannon during a cannonade and the deafness that resulted was tested with a shrill whistle, the barking of dogs, and thorough examination by all the modern otologic and galvanic tests. Conditions as to the hearing were found precisely like those of the common war deafness. The middle ear seemed to escape, but the labyrinth crushed down, a kind of rupture of the cochlea. This affords ample explanation for the gravity of war deafness.

34. **Insufficiency of the Kidneys and Gastro-Intestinal Derangement.**—Mattei relates that among the 620 soldiers admitted to his service devoted to intestinal disease, there were quite a number in whom the bowel symptoms seemed to be secondary to severe derangement of the kidneys. Aside from 25 with complete renal insufficiency and from 25 with true dysentery and albuminuria, there were 61 of this group. Some of the cases ran an acutely fatal course, but in all the somnolent aspect arrested attention from the first. Recovery did not occur in any case until the urea content of the blood had returned to the normal range. When the urea content kept high, the sickness kept up, with somnolency, headache, vomiting, epistaxis and eruptions. In the few cases that came to necropsy, the digestive tract showed only minimal changes but the kidneys were badly diseased. The bacteriologic blood findings were negative but the stools presented various bacilli including the dysentery bacillus and ameba. Four-fifths of the patients had a history of some severe infectious disease more or less recently, scarlet fever, measles, diphtheria or typhoid fever. He remarks that it is difficult in his service to learn whether the men have or have not had syphilis. He explains the whole trouble as the effect of intense overwork, with sleeplessness and errors in diet, with resulting lessened resistance on the part of the bowels and some intestinal infection setting up diarrhea. The previously damaged kidneys suffer from the diversion of fluids to the intestines, and nitrogenous waste accumulates, with toxic disturbances, setting up a vicious circle with the kidneys bearing the brunt of the trouble. Treatment directed to the kidneys gave the greatest benefit.

35. **Pericarditis with Effusion.**—Chavigny insists that the paradoxic pulse is not peculiar to mediastinopericarditis, as many believe. It is encountered also with certain aneurysms, stenosis of the larynx and croup, but as a rule it is the sign of pericarditis with large effusion. He adds that pericarditis with effusion is of two forms: "those that are diagnosed but which do not exist in reality, and those which are genuine but are overlooked in the clinic." But the paradoxic pulse can almost be counted on; he found it pronounced in his four cases of pericaditis with retrocardiac effusion. Surgical measures are indicated at once. He cured two of his four patients with an emergency pericardotomy, and thinks that it might have proved effectual in the fourth case if it had been accepted. In this latter case there were none of the classic signs of the affection, the disease was latent throughout, but the paradoxic pulse gave the clue. The man was pale, with pain in the lower side of the left thorax and there was evidence of a pleural effusion but all this was not enough to explain the extreme dyspnea.

36. **Trench Frostbite.**—Cottet relates that the condition known as trench frostbite is more properly a neuritis; both arms and legs may be affected. Cold and wet affect the nerves and the trophic disturbances which result may long persist. He is convinced that there is probably always some local predisposition, and urges the necessity for seeking out the soldiers with this predisposition in order to guard them against factors liable to bring on trouble. Those predisposed have various paresthesias. Up to the knee and elbow thermic and contact sensations are dull as also the sensation for pain. This hypo-esthesia can be determined symmetrically on both legs, in segmental arrangement, and occasionally on the arms likewise. The sensation in feet and hands may vary.

Presse Médicale, Paris

March 5, XXV, No. 14, pp. 129-144

37 *Transfusion of Defibrinated Blood and of Rinsed Corpuscles after Hemorrhage. E. Hédon.—p. 129.

38 *Diagnosis and Treatment of Gastric Ulcer; Technic for Excision. V. Pauchet.—p. 132.

39 Present Status of Sphygmomanometry. (Etude comparée des méthodes générales de sphygmomanométrie.) J. A. Barré and A. Strohl.—p. 134.

40 Present Status of Knowledge of Secondary Sexual Characters. Editorial.—p. 137.

March 8, No. 15, pp. 145-152

41 *Bone Grafts. (Remarques sur la greffe osseuse.) L. Imbert.—p. 145.

42 Keloids on War Wounds. (Cheloides et blessures de guerre.) J. Etienne.—p. 146.

37. **Transfusion of Blood After Hemorrhage.**—Hédon recalls that in 1902 he reported successful experiments on almost exsanguinated rabbits, restoring them to clinical health by injecting saline to which he had added red corpuscles thoroughly washed from all traces of blood serum. The corpuscles were taken from the blood of an animal of the same species. On the other hand, defibrinated blood seems to possess certain toxic properties in transfusion, but his recent research has shown how this can be avoided. He remarks that direct transfusion of the whole blood is undoubtedly the preferable method, but when this is not practicable, defibrinated blood or rinsed corpuscles may prove an effectual substitute. The rinsed corpuscles method offers possibly a means to restore the purity of the blood when, in the course of intoxications or infections, it contains the toxic principles in the fluid part while the red corpuscles are still intact. In such circumstances repeated venesection is indicated, and by collecting, rinsing and reinjecting the red corpuscles, large amounts of blood can be withdrawn as the patient in this way will lose only the blood serum. Fleig has reported a case in which this blood-letting plus transfusion of corpuscles was applied several times, and each time the symptoms of uremia disappeared at once afterward, and the man left the hospital much improved. Jurevitch and Rosenberg announced in 1914 that rabbit red corpuscles rinsed in a solution of sodium chlorid and sodium citrate retain their vital properties outside the body for several hours, and exsanguinated animals recuperate under reinjection of the rinsed corpuscles while the controls all die. He adds that Peyton Rous and Turner are even more emphatic in stating that washed red corpuscles kept even for three or four weeks answer the purpose. The solution they found most favorable for human reds is a mixture of three parts of blood and two parts of an isotonic solution (3.8 per cent.) of sodium citrate and five parts of an isotonic solution (5.4 per cent.) of glucose, keeping the whole chilled, at a temperature of from 1 to 3 C.

Hédon's experimental research and clinical experience have shown that fresh defibrinated blood is quite toxic, but that this toxicity rapidly subsides. Dilution does not seem to attenuate the toxicity, but letting the blood stand for a few hours, kept chilled, seems to annul all toxicity. Addition of sodium citrate to fresh defibrinated blood in amounts sufficient to prevent coagulation reduces its toxicity but does not annul it altogether. But when the defibrinated blood is several hours old, addition of sodium citrate seems to do away with the last tendency to toxicity. The proportions in his experimental tests were 0.3 gm. of sodium citrate to 60 c.c. of the defibrinated blood. An additional precautionary measure is to start with a small hypotoxic injection, half an hour before the main injection. This seemed to be the effectual factor in the survival of two rabbits when all the controls promptly succumbed. The two rabbits had been given an intravenous injection of 6 c.c. of fresh defibrinated blood after 50 c.c. of blood had been withdrawn. Half an hour later the remainder of the defibrinated blood (45 c.c.) was injected without mishap. In conclusion he reiterates that defibrinated blood should never be used fresh, but only after it has been kept

for several hours, twenty-four hours if it can be kept chilled. It should be filtered slowly through paper moistened with saline, and then diluted with physiologic solution to which 3 per thousand sodium citrate can be added. The injection should be made slowly, possibly commencing with a small injection. Hayem reported that in his experiments on dogs the red corpuscles injected in the defibrinated blood in time die off, but that this is masked by the very active blood production set in play by the injection.

38. **Gastric Ulcer.**—Pauchet insists that operative measures are indicated when a gastric ulcer becomes chronic and attacks of hyperchlorhydria return. He extols excision as the simplest and most rational method of treatment, and describes the preferable technic for this, with eight illustrations, especially when the ulcer is in the lesser curvature. In this location, gastro-enterostomy is usually futile. After recovery from the operation, the patient should be supervised both by the physician and the roentgenologist as chronic ulcer often is but one link in a chain of disturbances. It sometimes accompanies chronic disease in the gallbladder or appendix, a Lane's kink, ptosis or insufficiency of the pancreas, kidneys or liver.

41. **Repair with Bone Grafts.**—Imbert denies that a bone graft bridging a gap can produce callus enough to fill up the gap. But the gap gets filled up, nevertheless, and he ascribes this to the stimulation of callus production in the stumps by the presence of the graft. The graft serves also to direct the callus production along the desired lines. Its stimulating action is most pronounced, naturally, when the bone graft is introduced into the center of the stumps rather than when it is applied to the side.

Progrès Médical, Paris

March 10, XXXII, No. 10, pp. 77-84

43 *Topography of the Sensory Modifications in the Course of Physiopathologic Disturbances. (Constitution d'un syndrome radiculo-sympathique réflexe.) L. Lortat-Jacob, R. Oppenheim and A. Tournay.—p. 77.

44 *Hystero-Traumatism with the Physiopathologic Clinical Picture Cured by Reeducation. J. Ferrand.—p. 81.

43-44. **Sensory and Motor Disturbances of Reflex Origin.**—The disturbances described are classified as physiopathologic, the mind not being a direct factor. The disturbances are more of a reflex nature, but the reflex mechanism involved is more extensive than Charcot's conception of reflex functioning. The entire root, spinal cord and sympathetic systems may be involved, as is described, with a few typical illustrations. Ferrand reports an instructive case—already subjected to two useless operations—and emphasizes that treatment should be along the lines of that for hystero-traumatism, ranging as required from moral suasion to the most painful electric currents. By these means treatment is often crowned with success. The physiopathologic symptoms, he reiterates, are nothing new, and they do not contraindicate psychotherapy. He does not approve of this term "physiopathologic" nor of "reflex"; both indicate that hysteria is not responsible for the manifestations, while he is convinced that they fit into Charcot's frame of hystero-traumatism.

Policlinico, Rome

March 25, XXIV, No. 13, pp. 405-436

45 Means to Facilitate Medical and Surgical Work at the Front. (Proposte per il servizio sanitario chirurgico del R. Esercito al fronte.) R. Alessandri and R. Bastianelli.—p. 405.

46 Artificial Devices to Aid in Overcoming Paralysis of Peripheral Nerves. G. Dragotti.—p. 410.

47 *Tendon Plastics to Counteract Traumatic Radial Paralysis. L. Isnardi.—p. 413.

48 *Quantitative Test for Uric Acid in the Urine. A. Angiolani. —p. 415.

49 Plea for More Necropsies. (Scintille vivificatrici nella materia morta.) E. B. Lay.—p. 415.

February, Surgical Section No. 2, pp. 49-96

50 Extraction of Projectiles Under Roentgen Control. E. Fioretti. —p. 49.

51 *Mixed Tumor of Tonsil Region. B. Quarella.—p. 60.

52 Use of Pedunculated Skin Flap after Removal of Optic Endothelioma. (Sopra un caso di resezione dell'ottico, per endotelioma, mediante il mio processo modificato.) S. Calderaro.—p. 75. Commenced in No. 1, p. 40.

53 Mycosis of the Throat. (Zymonematosi indigena della gola.) G. Basile.—p. 88. To be continued.

47. **Tendon Graft for Radial Paralysis.**—Isnardi's patient had been wounded in the arm six months before, and the radial paralysis had long shown its permanent character. The hand drooped on the wrist almost parallel to the forearm and although nothing was done to conquer the paralysis yet great benefit was derived from bringing the hand up into a line with the forearm. This was accomplished by resecting 2 cm. from each extensor tendon and suturing the stumps. When an operation on the nerve is not deemed advisable, he thinks this shortening of the tendons might prove advantageous both for hand and foot. He has not been able to persuade any of the soldiers with sciatic paralysis to submit to this operation as, he says, they are afraid they will be cured too well. He remarks that the government is inspired by an unhealthy sentimentalism in allowing the soldiers the right to refuse even rational operative measures which would reduce crippling inability. At least, he declares, this refusal on their part should be taken into account in computing the pension later.

48. **Quantitative Test for Uric Acid in the Urine.**—Angiolani mixes 250 c.c. of the urine with 10 c.c. of concentrated hydrochloric acid and sets aside for twenty-four hours in a cool place. The uric acid crystals which collect are rinsed repeatedly on a filter with water acidulated with hydrochloric acid. Then 20 or 25 c.c. of a 10 per cent. solution of potassium hydrate is poured on the filter which dissolves the uric acid crystals. The filter is rinsed further with 100 c.c. distilled water which is added to the filtrate, and sulphuric acid is added until the fluid is strongly acid. The uric acid present is estimated by titration with a 4:1,000 solution of potassium permanganate, made with distilled water; 1 c.c. of this solution corresponds to 0.00857 gm. of uric acid. The simplified formula, V representing the number of cubic centimeters of the permanganate solution, is: U (per thousand) $= 0.034 \times V$. A table is given showing the proportion of uric acid that corresponds to amounts of the permanganate solution from 1 to 48.5 c.c.

51. **Mixed Tumor of the Tonsil.**—Quarella reports a case which he calculates is the eighty-ninth case on record of a tumor in the tonsil, and the first on record of a mixed tumor of embryonal origin. His patient was a girl of 15 and the tonsil tumor was removed without mishap. It measured 5.5 by 3.5 cm. and had been first noticed as a very small bunch about four months before. The bibliography is appended, classified as the tumors were benign or malignant.

Riforma Medica, Naples

March 2, XXXIII, No. 9, pp. 225-252

54 *Improved Technic for Suturing the Liver. (Nuova tecnica per la sutura del fegato.) A. L. Soresi.—p. 240.

March 10, No. 10, pp. 253-280

55 Trophic Lesions Following War Wounds. (Contributo allo studio delle lesioni del simpatico nelle ferite dei nervi degli arti.) L. Ferrannini.—p. 253. Commenced in No. 9, p. 226.

56 Gas Gangrene After War Wounds. (La gangrena gassosa delle ferite di guerra.) C. Oliva.—p. 256. Commenced in No. 7, p. 172.

57 Foreign Body in the Bladder. (Contributo allo studio dei corpi estranei in vescica.) T. Cattaneo.—p. 263.

54. **Suture of the Liver.**—Soresi passes the needle through a small wheel made of fine silver wire. Each wheel has eight spokes and the diameter varies from 6 to 15 mm. as desired. By thus reenforcing the suture at each end, the threads never tear out and the suture takes less time, while these little wheels never caused the least inconvenience in his experimental research and in the numerous clinical cases in which they have been applied. The silver seems to have an electrolytic action which aids in warding off infection, while silver seems the metal best tolerated by the tissues. The suturing is done with catgut. He describes a case in detail in which both stomach and liver had been torn, and the patient, he is sure, owes his life to the speed with which the liver could be sutured at two points with the aid of four little wheels. He gives some illustrations showing how to make the most solid knot over the wheel.

Brazil Medico, Rio de Janeiro

March 10, XXXI, No. 10, pp. 81-88

58 *Suppuration in Goitrous Thyroid. (Um caso de estrumite.) F. Luz.—p. 82.

March 17, No. 11, pp. 89-96

59 Evolution of the Schistosomum Mansoni. A. Lutz.—p. 89. Commenced in No. 10, p. 81.
60 Poisonous Fishes of Brazil. (Sobre os peixes venenosos.) O. O. R. da Fonseca.—p. 90. To be continued.
61 Heliotherapy in Brazil. A. Moncorvo, Jr. Continuation.—p. 91.

58. **Suppuration in a Goiter.**—The woman of 50 had had the goiter for twenty-five years but it had never caused any disturbance until the last few months, when, after an attack of dysentery, a large tumor developed acutely in the thyroid with a fistula into the esophagus. The tumor grew so large it threatened suffocation. Some relief was obtained when pus was expelled into the esophagus. Luz incised and drained the tumor, finding calcareous degeneration in part of the thyroid. After the patient had recovered from this he resected the left lobe of the thyroid, the seat of the tumor, and there has been no further trouble since.

Semana Medica, Buenos Aires

XXIV, No. 1, pp. 1-28

62 Problem of Painless Labor Not Yet Satisfactorily Solved. (Sobre la supresion del dolor en el parto fisiologico.) J. A. Beruti. —p. 1.
63 *Paralytic Accidents After Treatment for Rabies. C. R. Mejio. —p. 10.
64 *Leprosy in Argentine Province. E. F. Solari.—p. 15.

No. 2, pp. 29-56

65 Malaria in Argentine Army during 1915. P. J. Garcia.—p. 29.
66 Anti-Tobacco League. (La lucha antitabaquica.) E. R. Coni.—p. 34.
67 Gonococcus Perinephritic Abscess Treated with Vaccine. (Absceso perinefritico a gonococos tratado con el Haptinogeno Gono Mendez.) J. C. Mira.—p. 37.
68 *Lymphocytosis in Syphilitics. C. P. Mayer and A. C. Gourdy. —p. 39. Continuation.
69 Progress in Ophthalmology in Spain and Spanish America in the Present Century. J. Santos Fernandez.—p. 44.
70 Measles an Alimentary Arsenical Poisoning. S. V. de Castro.—p. 49.
71 Scarlet Fever an Alimentary Iodin Poisoning. S. V. de Castro. —p. 49.

63. **Paralysis After Pasteur Treatment for Rabies.**—Mejio reported six years ago ten cases of paralytic accidents consecutive to Pasteur treatment in prophylaxis of rabies. In each the symptoms suggested acute transverse myelitis in the dorsolumbar region. Since then he has encountered a number of cases but in this later series the disturbances were of the nature of peripheral neuritis, polyneuritis or acute ascending paralysis. In the total 19,800 persons who have been treated at the Pasteur Institute at Buenos Aires in his charge, twenty-four developed these paralytic accidents and in four the consequences were fatal. Only ninety-three of the many thousands treated succumbed to rabies, a total of 4.76 per thousand. He is inclined to think that the paralysis might be warded off by greater care in preparation of the virus and of the patient. The tendency is to shorten the course and this he warns may be disastrous. In seven of the eleven cases recorded here the paralytic phenomena were restricted to a limited region and soon subsided more or less completely. The region affected was exposed to the air and thus subject to chilling. The other four were the fatal cases mentioned above. One patient was a child of 6, apparently healthy a month after the Pasteur treatment. He then had a fall from a hammock and the next day his legs were paralyzed and the paralysis proved of the ascending type, fatal in two weeks. The ascending paralysis in the three other patients, all adults, developed a day or two after the close of the treatment and the men died in two or three weeks.

64. **Leprosy in Argentine Province.**—Solari states that the leprosy in the nineteen cases known in the province was imported, except in one family in which the two daughters had acquired the disease from the mother. He accepts a microbian and contagious character for leprosy, and reiterates that each leper that is isolated is a focus of contagion extinguished.

68. **Lymphocytosis in Syphilitics.**—Mayer and Gourdy's communications on this subject have been appearing weekly in the *Semana* for several months. The main points were summarized in these columns, Feb. 24, 1917, p. 668.

Siglo Medico, Madrid

March 24, LXIV, No. 3302, pp. 185-204

72 *Large Traumatic Hernia of the Diaphragm. Gil y Casares.—p. 186.

March 31, No. 3303, pp. 205-224

73 *Progressive Paralysis; Two Cases. (Dos casos de paralisis general progresiva de los enajenados.) E. M. Villapadierna.—p. 206. Commenced in No. 3302, p. 189.
74 The Pathology of Southern Spain. (Caracteristicas regionales de la patologia andaluza.) F. F. Martinez.—p. 216. To be continued.

72. **Hernia of the Diaphragm.**—The young man was under observation for over a year but did not seem to suffer chronically from the extensive protrusion of the stomach through a stab wound of the left diaphragm. The heart and pulse seemed to be normal and there was no dyspnea. The only disturbance was occasional dyspepsia with a sensation of oppression after eating. The Roentgen findings are given, showing how a sound introduced into the stomach could be seen high up in the left chest. The percussion and auscultation findings are described in detail. The diagnosis at first was traumatic hydropneumothorax but puncture was negative both for fluid and air.

73. **Progressive Paralysis.**—Villapadierna concludes his study of two recent cases and review of previous experience and the literature, with the statement that although spirochetes may be found in the brain of patients with progressive paralysis, yet the lack of favorable influence from specific treatment indicates that these spirochetes have undergone some profound biologic modification. This can be the only explanation for their nonresponse which is in such marked contrast to the behavior of the spirochetes in cerebral syphilis.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

December, 1916, XVI, No. 2, pp. 213-443. German Edition. Last indexed April 28, p. 1297

75 *Laking of the Red Corpuscles at Temperatures over 118 F. (Ueber das Lackfarbenwerden der roten Blutkörperchen durch die Wärme (Wärmehämolyse.) H. Takaki and H. Miyazaki.—p. 213.
76 *Further Research on Paroxysmal Hemoglobinuria. T. Kumagai and I. Ito.—p. 227.
77 *Modified Micromethod for Determining Sugar Content of Blood and Urine. (Mikromethode der Zuckerbestimmung im Blute und im Harne.) G. Momose.—p. 271.
78 *Proteus Infection of Middle Ear. (Ueber den Bacillus proteus vulgaris bei chronischen Mittelohreiterungen und deren Komplikationen.) T. Wada.—p. 289.
79 *Experimental Labyrinthitis. Y. Hosoya.—p. 333.

75. **Warmth Hemolysis.**—The hemoglobin may escape from the red corpuscles under the influence of temperatures between 48 and 70 C., but the corpuscle body does not become disintegrated, and hence the process is really merely laking, not hemolysis. It occurs at temperatures too low to melt the lipoid covering of the corpuscles. The temperature, time, concentration and tendency to anemia seem to modify the process according to mathematical laws.

76. **Paroxysmal Hemoglobinuria.**—Kumagai and Ito four years ago reported their conclusions from study of twenty-five cases of hemoglobinuria, and they now supplement this with a further series of five typical cases of paroxysmal hemoglobinuria and thirty in a latent stage. The detailed findings are given in numerous tables. They confirm the assumption that autohemolysis can occur only when at the time of the chilling both autohemolysin and complement are present in the blood. The red corpuscles of those subject to hemoglobinuria are not in the least more fragile than the reds of normal persons. Among other data presented as the results of the research described, is the fact that when the autohemolysis is prevented by an anticomplement present, the latter can be removed by means of adsorption by kaolin.

77. **Micromethod for Sugar Determination.**—Momose reiterates here his previous endorsement of the advantages of his modification of the Pavy-Kumagawa-Suto reduction test for sugar in blood or urine (1913). He says that the findings are reliable even with only 1 c.c. of blood while the technic is simple and easy. An illustration is given of the little apparatus as modified from the original design. The principle of the test is to drop the fluid—after expulsion of air oxygen—into the simmering ammoniacal copper solution and titrate with hydroxylamin.

78. **Proteus Infection of the Middle Ear.**—Wada has compiled thirty cases from the literature in which the *Bacillus proteus*, alone or with other germs, was found in chronic disease of the temporal bone and its complications. In twenty-seven the brain was involved, mostly with fatal outcome. He has encountered in his own practice seven cases of proteus otitis media; four were cured by operative measures, one recovered under palliative treatment, and the others are still under treatment. In two of the cases there were intracranial complications. Most of the others had caries with cholesteatoma. He ascribes his success to his early intervention. Operative treatment is the only protection against the spread of the infectious process and dangerous complications. The proteus seems to be a secondary invader, but it assumes pronounced pathogenic properties. Typhoid serum agglutinates the proteus. The latter is pathogenic for mice, guinea-pigs and rabbits, but not at all by way of the digestive tract.

79. **Experimental Labyrinthitis.**—Hosoya devotes 110 pages to his account of his research on monkeys, dogs, cats, rabbits and guinea-pigs, inoculating them directly through a long incision below the ear, underneath the musculature of the neck. The germs used were streptococci, staphylococci, typhoid, diphtheria, colon, plague and human and bovine tubercle bacilli, besides diphtheria toxins and caustics such as chromic and trichloracetic acid, the actual cautery and bullets. The article is accompanied by six full page plates, one colored, and five double-page tables showing the details and outcome of the experiments on sixty-one animals, under twelve headings. This experimental labyrinthitis displayed a constant tendency to spontaneous recovery except in the tuberculous cases.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

February 10, I, No. 6, pp. 353-432

80 Physiologic Acetonuria. J. Koopman.—p. 366.
81 *Drugs Now Available in Holland. (Geneesmiddelen in oorlogstijd.) P. van der Wielen.—p. 374.
82 Juvenile Paralytic Dementia; Four Cases. G. C. Bolten.—p. 378.
83 Glass Syringe Crushed in Vagina. (Een niet alledaagsch ongeval.) J. A. P. de Bruyn.—p. 388.

81. **Drugs in Wartime.**—A physician has appealed to the *Tijdschrift* for information in regard to the dependability of the drugs now available in the Netherlands, including the home-made substitutes for drugs formerly supplied by importation. The reply states that it can be accepted as the rule that none of the drugs now available comply in every respect with the requirements of the Pharmacopeia. But the impurities are usually of a harmless nature; they consist mostly of sulphates, chlorids and iron, and they are present in such amounts that they are readily demonstrated by the usual tests for such substances. In a recent course of extensive research by the writer, who is professor of pharmacy and materia medica at the University of Amsterdam, he found arsenic or lead only in a single instance each. He says that the manufacturing chemists in the past few years have supplanted the chemical drugs with synthetics (*chemicälien*), and if circumstances now are forcing a return to the simple chemical drugs, this, in his opinion, will be not a calamity but quite the reverse. He suggests that it might be well to issue a "war pharmacopeia," specifying the limits permissible to impurities—or rather by-substances—in the drugs now available, with the proviso that they are to be used as medicines and not as reagents. Among other articles discussed, he says that the price of cod liver oil is not more abnormal than the prices for other products. The Norwegian dealers keep the price up, and the only remedy is for the government to pay part of the price of each cask. Under the present circumstances a cheaper fat, possibly butter, has to be ordered in place of cod liver oil. He remarks in conclusion that the price of drugs is too high even for wartimes. They pass through many hands; even the wholesale dealers are second or third in the chain, and reliable market reports are not available now.

Hospitalstidende, Copenhagen

March 14, LX, No. 11, pp. 249-272

84 *Optochin in Treatment of Pneumococcus Infection. K. K. K. Lundsgaard.—p. 249.

March 21, No. 12, pp. 273-296

85 *Five Years of Radium Treatment of Cancer. (Oversikt över resultaten av kräftbehandling vid Radiumhemmet i Stockholm 1910-1915). G. Forssell.—p. 273.

84. **Optochin.**—Lundsgaard is an ophthalmologist, and he remarks that optochin has exceptional interest for his specialty on account of the possibility of its proving effectual in pneumococcus affections of the eye, and also of the amblyopia which sometimes has followed its use internally. As the pneumococcus is responsible for serpiginous ulcer of the cornea in about 95 per cent. of all cases, optochin in local application to the cornea has scored a triumph. It induces complete anesthesia of the cornea a few minutes after instillation of the 1 per cent. solution. Leber was the first to apply it here (1913), and all agree, he says, that for ulcus corneae serpens it is superior to all other means of treatment. The results will be still better when the general practitioner hastens to instill optochin at the first suspicion of ulcer of the cornea. The instillation should be repeated every hour, night and day, at first, to obviate the breeding of a refractory strain of pneumococci. Or an optochin salve can be used. The patient should recline after each instillation. The course of treatment takes ten days on an average. There is no need for any operation on the lacrimal sac. As to optochin blindness, he has seen a case in consultation and reviews several cases from the literature. The amblyopia is generally transient; the spasm of the vessels subsides and vision returns in some cases, but not in all. Serious sequels were left in some cases, so that the apprehension as to its internal use seems to be growing. His case presented the typical picture of optochin blindness. Totally or nearly totally blind at first, central vision gradually returned but colors cannot be distinguished, and the visual field is still extremely contracted, as if one were looking through a long narrow tube. The disturbance in the eyes seems to be from spasmodic contraction of the vessels, and he suggests that it might be possible to ward this off, perhaps, by giving some vessel-dilating drug along with the optochin.

85. **Five Years Radiotherapy of Cancer.**—Forssell gives an oversight of the results of treatment of 1,015 cancer patients at the Stockholm Radiumhemmet. The cases are classified by location, stage, etc., and the technic is described in detail. The main reliance was on radium, but the Roentgen rays were often used. In 207 cases of deeply rooted inoperable cancer in different organs, primary or recurrence, a clinical cure was realized in fourteen; thirty-five were permanently improved, and eighty-six did not seem to be influenced by the radiation. But 52.2 per cent. were notably improved by the treatment. Even among those only temporarily improved, the benefit was striking although it was not permanent.

Hygiea, Stockholm

LXXIX, No. 5, pp. 193-256

86 *Cutaneous Affection Resembling Primary Syphilid in Young Woman with Inherited Syphilis. (Utslag, liknande ett syfilitiskt första exanthem hos en 19-årig hereditärsyfilitiker.) N. Rhodin.—p. 193.

86. **Primary Syphilid with Inherited Syphilis?**—Rhodin was unable to find anything suggesting the primary sore of syphilis in the case described, but the eruption resembled in every respect the primary cutaneous manifestations of syphilis. The young woman was known to have inherited syphilis and presented numerous stigmata. The Wassermann test was positive, and he does not venture to decide whether the eruption was a tardy manifestation of the inherited disease or a sign of newly acquired superposed infection.

Norsk Magazin for Lægevidenskaben, Christiania

March, LXXVIII, No. 3, pp. 281-392

87 Experiences with Traumatic Tetanus at Christiania Hospital. H. J. Vetlesen.—p. 281.
88 *Fatal Tetany in Young Man. S. Kjølstad.—p. 307.
89 Tuberculous Ulceration on Dorsum of Penis. (Et tilfælde av tuberkuløse saar paa genitalia.) E. Bruusgaard.—p. 311.
90 *Tardy Manifestations of Inherited Syphilis with Negative Wassermann. E. Bruusgaard.—p. 316.
91 *Complications of Gastro-Enterostomy. O. Tandberg.—p. 325.
92 *Extrapleural Operations in Treatment of Pulmonary Tuberculosis; Eleven Cases. (Erfaringer om ekstrapleural torakoplastik.) P. Bull.—p. 335.

88. **Fatal Tetany in Adult.**—Kjølstad reports a case of fatal tonic convulsions in a man of 22. He had had an attack of convulsions about once a year during the last four years, always preceded by getting chilled. The attacks lasted a day or two, beginning with pains in the stomach and cramps in the limbs. The urine was normal but there was profuse diarrhea each time after the convulsions had subsided. In the intervals his health was good and he never had dyspeptic disturbances. The patient lived in a focus of endemic goiter. He succumbed in an unusually severe attack of the tetany, under increasing dyspnea and heart weakness. Necropsy was not permitted. He had worked as usual at roadmaking that January day up to his last attack, but had complained of cold feet. The attack came on after two hours in bed and proved fatal in forty-eight hours.

90. **Tardy Congenital Syphilis.**—The boy of 10 had always seemed to be healthy except for what was assumed to be lupus of the hard palate and nasal mucosa, which had begun two years before. The Wassermann reaction was negative, the Pirquet pronounced, but under potassium iodid the lesions have almost completely retrogressed. The assumption of syphilis was confirmed by examination of the boy's three sisters who all presented tertiary syphilitic lesions and stigmata, although not previously recognized as such. The five cases reported are instances of the damage wrought by failure to recognize the manifestations of inherited syphilis when they appear first as the child approaches puberty or the twenties with nothing to suggest syphilis before.

91. **Complications of Gastro-Enterostomy.**—Tandberg has had complications develop only in two of his fifty gastro-enterostomy cases of pyloric ulcer. These patients were men of 27 or 35, and seemed to be doing well after posterior retrocolic gastro-enterostomy with a short loop. In both at the eighth or ninth day the jejunum became occluded. The occlusion was corrected by a secondary operation in one case, but in the other further complications constantly developed, compelling five supplementary operations. No permanent relief was obtained until the pylorus and jejunum were resected and Roux' technic was applied ten months after the first laparotomy. Great palliative relief had been obtained by introducing a T drain, one end in the stomach, the other in the efferent loop, the stem emerging through the abdominal wall. There was no nausea or vomiting when this drain was in place, but they returned each time when it was removed. The gastro-enterostomy and also the pylorus were found permeable at each intervention, so the cause of the persisting nausea and vomiting is still a mystery. With the T drain it proved possible to supply adequate fluids and food and thus build up the patient's strength enough to stand the final resection.

92. **Operations for Pulmonary Tuberculosis.**—Bull's eleven cases of extrapleural thoracoplasty have convinced him that the general practitioner should not fail to give his patients the chance of recovery offered by these operations in suitable cases. That is, when a unilateral or predominantly unilateral tuberculous process is not cured by rational expectant treatment, including induced pneumothorax. Good results in such cases may still be obtained with an extrapleural operation on the chest wall. He works under paravertebral or local anesthesia, after giving 0.01 gm. morphin subcutaneously an hour and again fifteen minutes beforehand. He describes the incision and the technic with which he resects nine ribs to a total of 150, 160 or 183 cm. The operation is easier on women than on men as the ribs are thinner and they can be stripped more easily than in men. Four of his eleven patients were clinically cured; two have succumbed since to the progress of the disease, and three died from postoperative pneumonia or infection or both. One patient has been much improved during the few months to date, and one seemed to be benefited at first but died two years later with symptoms of intestinal tuberculosis. The fact that four or five apparently doomed, progressing cases were arrested and the patients restored to health and happiness justifies this extrapleural resection of the posterior portion of the ribs from the tenth or eleventh up to and including the second.

Ugeskrift for Laeger, Copenhagen

February 22, LXXIX, No. 8, pp. 279-308

93 *Carbohydrate Starvation in Infants. (Lidelser hos Smaabørn opstaaet efter langvarig Ernaering overvejende med Kulhydrater.) C. E. Bloch.—p. 279.

93. **Fatal Results from Too Exclusive Carbohydrate Feeding of Infants.**—Bloch relates that the child was 2 months old, a twin, of healthy parents. It weighed 2 kg. at birth and was fed with barley gruel exclusively. It seemed to be thriving until two months old when it began to decline, with diarrheic stools and emaciation, intertrigo on the buttocks and xerophthalmia. The temperature could not be brought above 34.3 C. and the child died within a month. The result of the carbohydrate starvation in this case was amylogenous atrophy. If the child is given milk occasionally it may develop universal edema as in another case described, with urine free from albumin and kidney cells. This type of disturbance from carbohydrate feeding has been called hydremic atrophy, but there is no atrophy. Cases of each type are illustrated, as also of a third type in which sclerema was accompanied by contracture of the neck and arms, the head being bent far back and the arms drawn up. This third child died at its sixth month. The extreme plumpness in this case was due to sclerema, not to edema alone, as in the other case. The mothers of both these "plump" children thought they were thriving satisfactorily until toward the end. The second child was moribund when first seen, all the organs, especially the heart, being so degenerated that it was impossible for the child to rally. Small and weak infants are more liable to develop the form with atrophy, while the older and stronger children are inclined to develop the dropsical type, especially if milk has been given now and then. The opisthotonos and other contractures can be corrected but they return as the pressure is removed. They subside permanently as the child recovers. Bloch does not regard them as actual tetany.

These carbohydrate children are peculiarly susceptible to infections. In treatment, albumin and fat must be given but great care is necessary not to give too much at first, especially of cow's milk, or chronic dyspepsia may become installed. The carbohydrates must not be suppressed entirely, and the gravest consequences may follow if these debilitated babes are put on water and tea alone. Breast milk is indispensable in the severer cases, and is best for all. The stools on too exclusive carbohydrate diet are acid, often loose and thin, with minute bubbles. As the stools grow more acid they may irritate the bowels as well as the skin, and the child suffers from amylogenous colitis. As soon as nourishment is given that does not ferment so readily, the colitis subsides, and on a more nourishing food the child gains rapidly in weight. Bloch has seen infants with this amylogenous colitis who had been treated erroneously with a constipating diet, bismuth and silver nitrate. The consequences were disastrous; in some cases scurvy developed. Albumin milk is particularly useful in this amylogenous colitis, but Bloch insists that the babe must not have all carbohydrates taken from it, so he adds 2 or 3 per cent. grape sugar to the albumin milk. He cites a case in detail to show the benefit from albumin milk after bismuth had failed to induce any improvement. Acorn coffee is useful also, and tannin albuminate. The latter, he says, is entirely harmless, and doses of a few grains a day can be given over long periods even to quite young infants. In some cases the bismuth salts are more effectual; the best, he thinks is bismuth subsalicylate, but he warns that bismuth is a poison and cannot be kept up long. It is important never to give bismuth or tannic acid preparations when the child is on a water or tea diet. Severe diarrhea with general symptoms calls for a day or two of water alone and then milk and water until all signs of intoxication are past. Not until then should carbohydrates be given. But with acute dyspepsia, as a rule, barley and oatmeal soup are useful, especially when the diarrhea is due to overfeeding with milk and there is much decomposition of albumin in the intestine. The barley soup must be thin, actual barley water, and there should not be more than 2 per cent. cane sugar. This rests the bowels and in a few days normal feeding can be resumed. He adds that cow's milk must be boiled for children with these bowel troubles.